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THESIS

**COMPLACENCY:
A THREAT TO HOMELAND SECURITY?**

by

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June 2014

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This thesis draws from human factors science, folk science and folk psychology, complexity theory, homeland security doctrine, psychology and biology reference works, and applied research to develop a concept of complacency for the homeland security discipline. The hypothesis is that a clear definition may lead to actionable, observable measures to mitigate it. The research concludes that complacency is more commonly used as a proverbial threat than an actionable threat, but reveals a plethora of future research opportunities for a human-factors approach to addressing threats of this nature.

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COMPLACENCY: A THREAT TO HOMELAND SECURITY?

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This thesis presents an unconventional approach to addressing a threat to homeland security by focusing on complacency through the lens of human factors and complexity. This approach requires a paradigm shift. In addition to focusing on external threats from enemies who wish to do this nation harm, and building capabilities to prepare for disasters, it is also necessary to look internally to the behaviors, attitudes, and states of mind of people within homeland security organizations to optimize the success of this country's efforts.

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LIST OF ACRONYMS AND ABBREVIATIONS

AR	applied research
BI	Balanced Innovation
CA	content analysis
DHS	Department of Homeland Security
GM	General Motors
HRO	high-reliability organizations
MWOD	Merriam-Webster Online Dictionary
OED	Oxford English Dictionary
PR	pure research
QA	qualitative analysis
QHSR	Quadrennial Homeland Security Review
REOO	reliability-oriented behaviors
ROEB	reliability-oriented employee behavior
SHRM	strategic human resource management
SOP	standard operating procedure
UK	United Kingdom
U.S.	United States

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EXECUTIVE SUMMARY

In the world of homeland security, it is common practice that as threats are identified, counter-measures are developed to mitigate that threat. One threat often mentioned, complacency, seems to be the exception. Complacency, as a threat to homeland security, is given ample deference by leadership in the homeland security community. It is often referred to as a dangerous threat in speeches by homeland security officials and is embedded in homeland security doctrine. However, no research can be currently found that articulates the threat in a manner that can lead to developing counter-measures to mitigate it.

A. INTRODUCTION

As threats to the homeland evolve, it is imperative that new ways of analyzing and assessing potential threats evolve as well. The 2010 Quadrennial Homeland Security Review (QHSR) states, “Achieving the goals of the core homeland security missions will require scientific research to discover new knowledge and methods that can be applied to homeland security challenges.” (Department of Homeland Security, 2010, p. 75). This statement provides the opening for exploring innovative and unconventional ways to enhance the resiliency of the homeland security enterprise that this thesis offers.

This thesis presents an unconventional, human factors approach by addressing complacency. A human factors approach focuses on psychology and behavior that will decrease the potential negative consequences of complacency. This approach requires a paradigm shift. In addition to focusing on external threats from enemies that wish to do this nation harm, and building capabilities to prepare for disasters, it is also necessary to look internally to the behaviors, attitudes, and states of mind of people within homeland security organizations to optimize the success of this country’s efforts.

B FRAMING THE PROBLEM

Tacitly, much research is driven by practical, readily accessible problems. People are attentive to concerns about decision making and policy direction and inattentive to implicit, deep rooted problems like complacency. However, dealing with consequences that result may from complacency can be much more costly than the value of lessons learned from them. Therefore, it is necessary to research, analyze, and draw conclusions as to what the concept of complacency is, as with other threats to homeland security.

Complacency is a general term commonly used by homeland security professionals to describe an attitude or human behavior that is an insidious threat to the homeland security mission. In an address to the Council on Foreign Relations, Janet Napolitano, Secretary for the United States (U.S.) Department of Homeland Security (DHS) stated, “I’m often asked if complacency is a threat in the United States and I believe the short answer is ‘yes’” (Napolitano, 2009). During remarks to the National Cargo Security Council, James Loy, former Deputy Secretary of DHS stated, “Complacency is the ally of the terrorist” (Loy, 2004). These statements elucidate complacency as a subjective and unconventional threat that warrants further understanding. However, specific measures to understand and address it are lacking.

The concept of complacency, much like many general concepts that describe complex human behavior, has developed and evolved over time through folk science, or more specifically, folk psychology. Folk science describes a way that people understand and predict the natural and social world, without the use of scrupulous, scientific methodologies. Based on this author’s research, complacency in homeland security has not undergone rigorous inquiry.

Complacency is easy, *prima facie*, to understand; its subjectivity evokes an intuitive understanding of what it means. However, the intuitive evocation is part of the reason complacency continues to be unaddressed. The usage of over-generalized terms that describe complex human behavior precludes further

investigation into the psychological mechanisms that may actually be responsible for the observed behavior (Dekker & Hollnagel, 2004).

C. RESEARCH QUESTIONS

What, exactly, is complacency? What causes homeland security practitioners, such as preparedness planners and intelligence analysts, to be less vigilant as they conduct their jobs on a routine basis? Is complacency really a threat to homeland security? If it is, can anything be done about it?

D. PRACTICAL SIGNIFICANCE OF RESEARCH

The purpose of this research is to gain a comprehensive understanding of what complacency really means in the homeland security discipline, determine its credibility as a threat, and provide a foundation from which to address it. The consumers of this research will be homeland security leadership open to unconventional approaches in support of the homeland security mission and identify complacency as a problem.

E. CONCLUSIONS

The author originally set out to apply basic problem-solving strategies to address a threat to homeland security, Complacency, through the lens of human factors and complexity. Her research concludes that the general manner in which complacency is commonly used today indicates it is more of a proverbial threat than an actionable threat. As a proverbial threat, it can be argued that it should not be mentioned at all. However, defining the concept into actionable, observable behavior may lead to actionable, observable measures to mitigate it.

This thesis was the first research to examine the threat critically. The research uncovered a broader range of lenses from which to view complacency in the homeland security enterprise. Each lens further unveiled limitless, albeit tangential, opportunities for research in a wide variety of disciplines. The lenses range the spectrum from philosophy, biological sciences, social sciences, and

applied sciences. This broad range allowed the surface to be scratched in each area, and further revealed extensive opportunity for future research.

Critical examination of the threat of complacency is in its infancy stages. Future research can be explored through the many lenses identified in this thesis. It is uncertain whether future research will find that complacency is a threat, is not a threat, or result in a definition, or definitions, that articulate the threat, and counter-measures are developed to mitigate it. However, it is certain that it will lead to more lenses from which it can be viewed.

List of References

Dekker, S., & Hollnagel, E. (2004). Human factors and folk models. *Cognition, Technology & Work*, 6(2), 79–86.

Department of Homeland Security. (2010). *Quadrennial homeland security review*. Washington, DC: Government Printing Office.

Loy, J. (2004, June 15). Remarks by deputy secretary of homeland security James Loy at the National Cargo Security Council Annual Convention. Las Vegas, NV.

Napolitano, J. (2009, July 29). *Feed your inner genius. Janet Napolitano: Counterterrorism in a networked world*. New York, NY: FORA.tv.

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Finally, to our daughter, Lane...I hope I make you proud.

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I. AN UNCONVENTIONAL APPROACH

Complacency is the greatest enemy that we have and the greatest challenge we have.

—Michael C. Chertoff, Former Secretary,
U.S. Department of Homeland Security

As threats to the homeland evolve, it is imperative that new ways of analyzing and assessing potential threats evolve as well. The 2010 Quadrennial Homeland Security Review (QHSR) states, “Achieving the goals of the core homeland security missions will require scientific research to discover new knowledge and methods that can be applied to homeland security challenges...” (Department of Homeland Security, 2010, p. 75). This statement provides the opening for exploring innovative and unconventional ways to enhance the resiliency of the homeland security enterprise that this thesis offers.

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Human factors are physical, cognitive, or social properties that affect the attitude, state of mind, and behavior of humans. These properties can influence the function of human-environment equilibriums and the overall performance of systems and organizations. Human factors science involves the study of all ways humans relate to the world around them, with the aim of improving operational performance. This science has become widely used across many disciplines since its origin during World War II when the military employed it in designing

aircrafts, by viewing the aircraft and the pilot as a single organism. While the initial focus of human factors science was on human interaction with technology, the science has expanded to encompass sets of human-specific properties that may interact in a critical or dangerous manner with the natural environment and within organizations.

II. INTRODUCTION

A. FRAMING THE PROBLEM

Tacitly, much research is driven by practical, readily accessible problems. People are attentive to concerns about decision making and policy direction and inattentive to implicit, deep rooted problems like complacency. However, dealing with consequences that result may from complacency can be much more costly than the value of lessons learned from them. Therefore, it is necessary to research, analyze, and draw conclusions as to what the concept of complacency is, as with other threats to homeland security.

Complacency is a general term commonly used by homeland security professionals to describe an attitude or human behavior that is an insidious threat to the homeland security mission. In an address to the Council on Foreign Relations, Janet Napolitano, Secretary for the United States (U.S.) Department of Homeland Security (DHS) stated, “I’m often asked if complacency is a threat in the United States and I believe the short answer is ‘yes’” (Napolitano, 2009). During remarks to the National Cargo Security Council, James Loy, former Deputy Secretary of DHS stated, “Complacency is the ally of the terrorist” (Loy, 2004). These statements elucidate complacency as a subjective and unconventional threat that warrants further understanding. However, specific measures to understand and address it are lacking.

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part of the reason complacency continues to be unaddressed. The usage of over-generalized terms that describe complex human behavior precludes further investigation into the psychological mechanisms that may actually be responsible for the observed behavior (Dekker & Hollnagel, 2004).

B. RESEARCH QUESTIONS

1. What Is Complacency for the Homeland Security Discipline?

What, exactly, is complacency? What causes homeland security practitioners, such as preparedness planners and intelligence analysts, to be less vigilant as they conduct their jobs on a routine basis? The initial course of action to respond to this question would be to consult scholarly dictionaries for a seemingly authoritative answer. Dictionaries define it as being, “The fact or state of being pleased with a thing or person; tranquil pleasure or satisfaction in something or someone; The fact or state of being pleased with oneself; Tranquil pleasure or satisfaction in one’s own condition or doings; Self-satisfaction; Contented acquiescence or consent; Disposition or wish to please, or comply with the wishes of, others” (Oxford English Dictionary, 2010) or, ““self-satisfaction especially when accompanied by unawareness of actual dangers or deficiencies; or an instance of usually unaware or uninformed self-satisfaction” (Webster Online Dictionary, 2011).

A psychologist might respond that complacency is, “A conscious or unconscious relaxation of one’s usual standards in making decisions and taking action” caused by “the subconscious or emotional mind (child ego state),...while it should be the conscious mind/rational mind (adult ego state) who is in control to find the cracks” (Grey Owl Aviation Consultants, 2004). A philosopher might respond that complacency “is the foundation of human behavior where the tendency of all living organisms is to seek a state of equilibrium” (Raup, 1925, p. 193).

Which is the right answer? Do they all apply to homeland security, partly apply, or mostly apply? These varying definitions and different perspectives

foreshadow the difficulty in developing an informed understanding of what it means for homeland security, but the implications of harm or failure associated with its use prompts further inquiry.

2. Is Complacency a Threat to Homeland Security?

Homeland security professionals commonly use the term complacency in a manner such that its presence is threatening to the homeland security mission. As cited earlier, Secretary Napolitano pointedly stated that it *is* a threat, and former Deputy Secretary Loy stated that it is an “ally of the terrorists” (Napolitano, 2009; Loy, 2004). Additionally, the QHSR lists nine assumptions about the nation’s security environment that influenced the strategic framework to support the homeland security mission. One of the assumptions states, “[W]e must guard against the danger of complacency as memories of the 9/11 attacks and other major crises recede” (Department of Homeland Security, 2010, p. 19).

The National Strategy for Homeland Security (NSHS) that preceded the QHSR also referred to complacency.

We must guard against complacency and balance the sense of optimism that is fundamental to the American character with the sober recognition that despite our best efforts, future catastrophes —natural and man-made—will occur, and thus we must always remain a prepared Nation. (The White House, 2007, p. 3)

In this case, it is addressed in more depth, but it is not defined, nor is it demonstrated how preparedness will balance the “sense of optimism” with the “sober recognition” that future catastrophes will occur.

By the context in which it is commonly used, the conclusion that complacency is a threat to homeland security seems to be “yes.” However, the attribution to a blanket term, “complacency,” ignores the context, and thus, defies a concrete analysis of the threat. Until a comprehensive understanding of what it is in homeland security exists, it is difficult to ascertain its credibility.

3. What, If Anything, Can We Do About It?

To move beyond the blanket attribution to complacency and determine if anything can be done about it, it is essential to first gain an informed understanding of what complacency is. This understanding can be accomplished by conducting a thorough analysis of how it is used in context, deconstruct it into key components, explore the human-specific properties and other factors that affect it, conduct an analytical review of how other complex organizations have dealt with it, and tie it all back together to develop a succinct definition. The comprehensive result should provide insight into its factors that can be manipulated in a manner that will prevent complacency, and thus, provide a foundation from which to address it.

C. PRACTICAL SIGNIFICANCE OF RESEARCH

The purpose of this research is to gain a comprehensive understanding of what complacency really means in the homeland security discipline, determine its credibility as a threat, and provide a foundation from which to address it. The consumers of this research will be homeland security leadership open to unconventional approaches in support of the homeland security mission and identify complacency as a problem. Options for future research include applying the informed understanding to specific levels of government, disciplines, and organizational structures of the homeland security enterprise and developing countermeasures to prevent it.

III. METHODOLOGY

The research problems are one of exploring a behavioral attribute of humans that comprise the homeland security enterprise, which is considered threatening to the success of the homeland security mission. Complacency is a blanket term blamed for failures, and homeland security leadership and professionals are constantly warning against without a succinct definition for its application to homeland security.

The author explores complacency without presupposition as to its meaning and researches it from a variety of different perspectives, thoroughly investigating its factors and implications. This review includes eliciting the deference it is given in official homeland security doctrine, inferring its factors by the manner in which it is used in context, and delving into the identified factors to see if something can be done to counteract it.

The author employs pure research (PR), qualitative analysis (QA), content analysis (CA) and applied research (AR) for this thesis. First, it is necessary to understand how the threat of complacency has been valued in building the homeland security mission. PR is employed to review documents, such as the QHSR and the NSHS to gain insight to the degree to which it is addressed to provide a baseline understanding of what credence the threat is currently given. Additionally, QA and CA is used to review editorials in scholarly journals, and opinion pieces, interviews or remarks made by homeland security professionals to gain insight of the degree to which it is used to describe a threat to homeland security. Sources for this QA and CA are the top search results from Google including scholarly journals, weblogs, editorials, and news publications since September 2001, when the concept of homeland security was first introduced.

Second, to develop a concept of complacency for the homeland security discipline the author reviews technical definitions and the way they are used in context. PR is used to review technical definitions in authoritative publications,

such as the English Oxford Dictionary. Additionally, QA and CA is applied to understand how it is used in context to infer underlying factors (e.g., temporal factor—if it is implied that complacency increases as time lapses since a successful attack). Sources for this QA and CA are the top search results from Google including scholarly journals, weblogs, editorials, and news publications since September 2001.

Third, after inferring factors that comprise the concept, the author uses PR to explore them individually (i.e., psychological, environmental, situational). She reviews scholarly sources that have been published in various fields of study to review each factor to provide a deconstructed view to determine which, and maybe how, each factor can be influenced to thwart complacency.

Finally, AR is used to review how the aviation industry has dealt with complacency. The aviation industry has explored complacency and its affects over the past few decades; it has enhanced some training programs, management development and changed organization constructs specifically to counter it. The author researches the knowledge that the aviation industry has produced and shared in a variety of scholarly works. This research may provide applicable insight to addressing complacency in homeland security.

IV. LITERATURE REVIEW

A. INTRODUCTION

The literature review for this thesis covers a broad range of material because it explores complexity theory, social science, and biological science. Additionally, it is important to introduce abstract notions that provide a background for this unconventional approach, such as human factors science and folk science. The review of literature is provided in the following categories.

Human Factors Science: To explain the approach to this thesis, this section provides a history of human factors science and the reasons this field of study originated. Furthermore, this section also provides insight on the status of its credibility and applicability in other industries, such as homeland security.

Folk Science and Folk Psychology: Literature on folk science and folk psychology is explored to provide a basic understanding of how general terms used to describe complex human behavior, such as complacency, have developed and become accepted within cultures. Specifically, for the purpose of this thesis, folk psychology theory will be closely reviewed because it pertains to how people refer to the “psychology of the mind,” which applies to complacency. This section also provides insight into the controversy regarding its credibility in describing mental state terms.

Complexity Theory: The literature reviewed in this section explores complexity theory because it provides an understanding of the complex nature of the homeland security enterprise. It is within this complex environment that complacency manifests and can be perceived as problematic. This section also provides a review of literature about how complexity theory has been applied to organizations and management within such organizations.

High Reliability Organizations and Reliability-Oriented Behaviors: This section reviews literature about complex high-reliability organizations (HRO) and reliability-oriented behaviors (REOO). HROs are complex systems that rely on

the people that comprise them and certain behaviors that employees should exhibit for the organization to be successful, which is applicable in every sense to the homeland security enterprise.

Homeland Security Doctrine: Homeland security doctrine provides a strategic framework for implementing the homeland security mission. A review of this literature is provided to understand how complacency is addressed at an overarching, official level that steers the activities of the enterprise. Furthermore, conclusions can be drawn from the deference it is given as a potential threat, and the context in which it is used can provide insight into its various perceived factors.

Definitions of Complacency: Scholarly references are consulted to understand what the technical definitions of complacency are in seemingly authoritative publications. The review of this literature aids in future analysis of the definitions to determine if they are adequate and applicable to the homeland security discipline. Assuming some are applicable, they also provide insight into factors that can affect, or contribute, to complacency.

Complacency in Context: This section reviews a plethora of examples of how complacency is used in reference to homeland security. The contextual inferences provide insight as to what it implies and factors that contribute to it.

Psychological and Biological Factors: This section explores the science of psychology to determine what psychological factors may contribute to what is commonly accepted as complacency. The psychological factors are gleaned from the definitions and the inferences when used in context. This section also explores potential biological predispositions towards complacency based on the psychological factors identified in the contextual review. This review aids in determining if biological factors support or reject natural tendencies towards complacency.

Situational and Environmental Factors: This section explores the situational and environmental factors of complacency implied in the contextual review. These factors include time, organizational construct, and management.

Research in Aviation Complacency: This section provides an in-depth review of literature from the aviation industry, which has comparable attributes to the homeland security enterprise. The aviation industry has conducted extensive research on human factors (specifically complacency) and applied the knowledge to training regimens and organizational constructs to improve operational performance.

B. HUMAN FACTORS SCIENCE

A plethora of literature provides definitions for, classifications of, and approaches for addressing human factors. This literature is in the form of scholarly books, journals and articles. Due to the wide range of disciplines that research human factors, the literature is from diverse backgrounds including psychology, engineering, and organizational design, etc. Prior to reviewing the literature on human factors as it relates to this thesis, the author provides a history of human factors science to establish its credibility as a discipline.

1. History of Human Factors Science

Human factors science initially focused on human interaction with technology, known as human factors and ergonomics, but has expanded to encompass all human interaction with the environment. It is generally accepted that human factors science originated during World War II, although advances that contributed to its formation can be traced to the turn of the 20th century. Then, humans were viewed as “unreliable components in complex systems” (Sloan, 2009). Prior to World War II, the focus was “designing the human to fit the machine” (Wickens, 2000), instead of designing machines to fit the human. If a system failure was attributed to a mechanical or material defect, considerable effort was spent on identifying and remedying the problem. However, this attitude

changed during World War II when the costs of human error were no longer acceptable.

At the beginning of World War I, a need existed to select and train pilots quickly for combat in the newly invented airplane. This need impelled the development of aviation psychology and the beginning of aeromedical research. Although advances were made during this time, the impetus for developing the discipline was not met due to a lack of “critical mass of technology and personnel as there was in World War II” (Meister, 1999, p. 149).

With the onset of World War II, two inherent needs were generated and became the catalyst for developing the human factors and ergonomics discipline.

First, the need to mobilize and employ vast numbers of men and women made it impractical to select individuals for specific jobs. Thus, the focus shifted to designing for people’s capabilities, while minimizing the negative consequences of their limitations. Second, World War II witnessed the tipping point where the technological advances had finally outpaced the ability of people to adapt and compensate to poor designs. This was most evident in airplane crashes by highly-trained pilots due to problems with control configurations and instrument displays. Also, enemy contacts were missed by motivated radar operators. Experimental psychologists were retained to study these issues by adapting laboratory techniques to solve applied problems. Consequently, the discipline of human factors and ergonomics was born, even if the people involved didn’t realize it at the time. (Shaver, 2009)

During this time, the U.S. military, in partnership with Europe, brought together psychologists, engineers, physicians, and experts drawn from many other disciplines to improve human performance (Sloan, 2009). The first efforts by these teams to improve human reliability were consistent with traditional approaches. For example, improved techniques for personnel selection, improved training methods, incentivization, and even the use of drugs to enhance vigilance (Sloan, 2009). Many of these approaches did, in fact, improve human performance, but the improvements were typically short-lived and research showed that the improved human performance degraded as a function of time on task (Sloan, 2009). A shift in thought was suggested. Instead of trying to shape

the operator to the characteristics of the system, try shaping the system to the characteristics of the human operator (Sloan, 2009). This shift in perspective marks the emergence of human factors as a discipline.

Beginning in the 1960s, the discipline continued to expand and influence previously established areas, such as computer hardware (1960s), computer software (1970s), nuclear power plants and weapon systems (1980s), the Internet and automation (1990s), and adaptive technology (2000s). More recently, new areas of interest have emerged including neuroergonomics and nanoergonomics. An enduring theme since its inception is the ever-expanding sphere of influence human factors and ergonomics has sought to encompass (Shaver, 2009).

Human factors science as a discipline for aviation research has come of age and is thriving. Its influence has lead to other applications beyond aviation. “Less effort now has to be expended on the advocacy of human factors contributions or on marketing them because the roles of human factors in aviation activities are accepted more willingly and more widely” (Wise, Garland, & Hopkin, 2010). What began as a narrowly defined break off of experimental psychology that focused on the interaction of people with machine, controls has broadly expanded to encompass almost any interaction of people with their surroundings (Shaver, 2009).

2. Human Factors Definitions

A variety of definitions for human factors are available. The Human Factors and Ergonomics Society website provides a running list of definitions categorized by professional societies, scientific literature, government agencies, industry, and open sources. Many of these definitions pertain specifically to select fields of study. For a broader, more contemporary perspective, this thesis uses the following definitions.

- Human factors is concerned with the application of what is known about people, their abilities, characteristics, and limitations to the design of equipment they use, environments in which they function,

and jobs they perform (“Educational Resources, Definitions of Human Factors and Ergonomics,” n.d.)

- Human factors is that field involved in conducting research regarding human psychological, social, physical, and biological characteristics, maintaining the information obtained from that research, and working to apply that information with respect to the design, operation, or use of products or systems for optimizing human performance, health, safety, and/or habitability. (The Dictionary for Human Factors/Ergonomics) (Stramler, 1993)

3. Human Factors Applications

As previously demonstrated, human factors science has increasingly expanded beyond the narrow focus in aviation that prompted its emergence as a discipline, which is reviewed again in more detail in a later section that reviews the aviation industry’s research on complacency as a human factor. Among many influences human factors science has had on different disciplines, it has also been introduced into the business world. The following example is reviewed to demonstrate the role human factors can play in the success or decline of a business, which has similar attributes to the homeland security enterprise.

A business concept, balanced innovation (BI), supports the credibility human factors has on the success of companies. BI focuses on how humans, organizations, and the intellectual components of humans, must balance and overlap in a specific manner so success and innovation will result. The Venn diagram in Figure 1, provided by Robert Carter, demonstrates how BI works. Carter proposes that the intellectual, organizational, and human factors components are equally important to success (Carter, 2008). Furthermore, it can be seen that the factors are all interconnected, which suggests that successful innovation is dependent on balance.

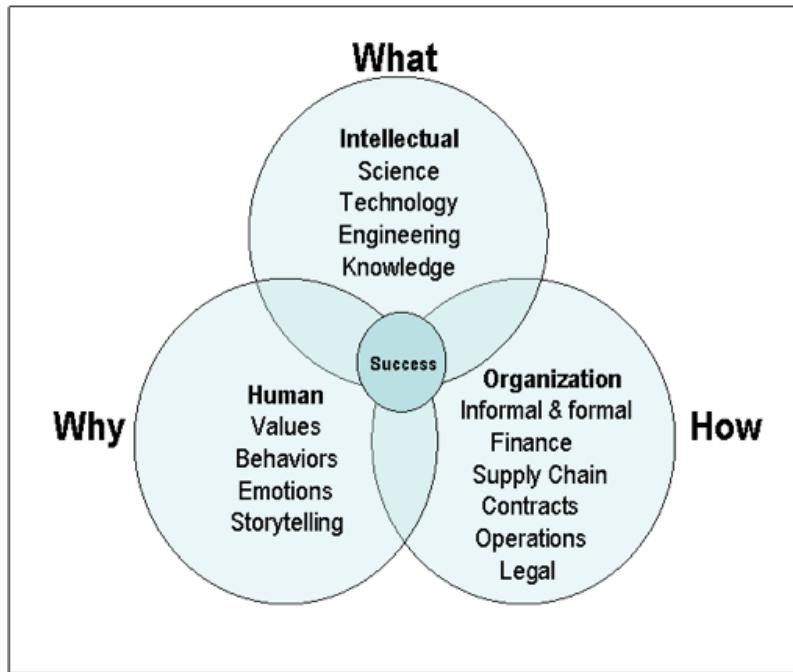


Figure 1. Venn Diagram

Carter (2008) proposes:

Your intellectual strength shows that you have the capabilities to deliver the product or service that your customers need. It is about your core competencies. Your organizational strength shows that you have the ability to produce what your customers need. Your human strengths show that you understand the needs, that you empathize with your customers, and that you are focused on satisfying those needs. Your behaviors prove that you can be trusted and the way you communicate proves that you are in empathy.

Each factor validates the others. The human factors validate the intellectual and organizational, the intellectual factors validate the organizational and human, and the organizational factors validate the human and intellectual. So the What validates the How and Why, and vice versa. This What, How, Why Balance, is key to success and is used throughout The Balanced Innovator. In order to achieve success in anything we do, we must reach a minimum threshold in each of the intellectual, organizational, and human factors. If one of these factors is weak, the What, How, and Why are not balanced.

A review of BI shows that human factors science is becoming more prevalent and well regarded when trying to developing strategies for success. While BI refers to success in business, the commonalities of the component factors (intellectual, humans, organizations) between business organizations and homeland security organizations demonstrates that applying research from human factors science can contribute to the success of the homeland security enterprise.

C. FOLK SCIENCE AND FOLK PSYCHOLOGY

Many different scholarly disciplines have studied and critiqued folk science in a variety of scholarly journals, academic studies, and other sources by physicists, psychologists, philosophers, and cognitive scientists. Reasons for exploring folk science are attributed to its inability to be subject to the scientific method to prove or disprove a hypothesis and mere fascination with understanding how memes are passed on within cultures and become accepted as “common wisdom.” For the purpose of this thesis, the prevalent use to describe mental states (also known as folk psychology) is explored to understand how a term like complacency has developed, evolved, and become accepted through common wisdom as a mental state.

In general, folk psychology is the theory that gives ordinary mental state terms their meaning, sometimes referred to as “philosophy of the mind.” Although the scope of folk psychology is very broad, contemporary discussion of folk psychology in philosophy and cognitive science has focused mainly on the portion of folk psychology that guides the prediction and explanation of actions (Nichols, 2002). Folk psychology has also been implicated in loftier endeavors, such as trying to make sense of Descartes’ reasons for thinking that many ideas are innate (Ravenscroft, 2010). The role of folk psychology is so omnipresent in everyday life that Jerry Fodor, an American philosopher and cognitive scientist, remarked that if folk psychology should turn out to be seriously mistaken, it would

be “the greatest intellectual catastrophe in the history of our species” (Nichols, 2002).

The concept of folk psychology has played a significant role in philosophy of mind and cognitive science over the last half century. Much debate has arisen about how it is related to the scientific understanding of the mind and brain emerging in psychology and the neurosciences (Stich & Nichols, 2003). The two most common and influential questions in the philosophy of the mind are the mind-body problem, which asks how mental phenomena are related to physical phenomena, and the problem of other minds, which asks how the mental states of other people are known (Stich & Nichols, 2003). Folk psychology strives to answer the latter.

A brief examination of folk psychology literature reveals, at the least, three distinguishable manners in which it is used: (1) sometimes “folk psychology” is used to refer to a particular set of cognitive capacities that include—but are not exhausted by—the capacities to predict and explain behavior, (2) the term “folk psychology” is also used to refer to a theory of behavior represented in the brain. According to many philosophers and cognitive scientists, the set of cognitive capacities are underpinned by folk psychology in this sense, and (3) the final sense of “folk psychology” is closely associated with the work of David Lewis. In this view, folk psychology is a psychological theory constituted by the platitudes about the mind ordinary people are inclined to endorse (Ravenscroft, 2010).

This last category of folk psychology is most applicable to this exploration of complacency and is reviewed in more depth. However, prior to reviewing Lewis’s work, it is first necessary to explore verificationism, which provides a basis for his argument. In the middle of the 20th century, the verificationist account of meaning had a major impact on philosophical thought. According to the verificationists, the meaning of an empirical claim is closely linked to the observations that would verify the claim (Nichols, 2002). They argued that if ordinary mental state terms like “belief,” “desire,” and “pain” are to be meaningful, they cannot refer to unobservable events occurring inside a person. Rather, the

meaning of sentences invoking these terms must be analyzed in terms of conditional sentences specifying how someone would behave under various circumstances (Nichols, 2002).

An example of verificationism is as follows. A philosophical behaviorist might suggest that the meaning of “John believes that snow is white” could be illustrated by: “If you ask John, ‘Is snow white’ he will respond affirmatively” (Nichols, 2002). However, this posed a serious problem because their analyses would often turn out to be blatantly mistaken or circular—utilizing one mental term during the analysis of another. Thus, referring to the aforementioned example, the second statement would have to be qualified with “even though John believes that snow is white, he may not respond affirmatively unless he is paying attention, wants to let you know what he thinks, believes that this can be done by responding affirmatively, etc.” (Nichols, 2002). At the same time, behavioral philosophers were analyzing behavior; philosophers of science were trying to apply verificationism to scientific terms and running into the same circularity (Stich & Nichols, 2003).

To refresh, verificationism requires that the meaning of a theoretical term must be specifiable in terms of observables. When philosophers actually tried to provide definitions for scientific terms, they always seemed to require additional theoretical terms (Hempel, 1964). The reaction to this circular problem was to explore a very different account of how theoretical terms obtained their meaning. Instead of being defined exclusively in terms of observables, this new account proposed a cluster of theoretical terms might get their meaning collectively by being embedded within an empirical theory (Hempel, 1964). Thus, the meaning of any given theoretical term lies in its theory-specified interconnections with other terms, both observational and theoretical (Hempel, 1964).

At this point, the conversation returns to David Lewis, who was perhaps the most influential philosopher of this view. According to Lewis, the meaning of theoretical terms is given by what he calls a “functional definition” (Stich & Nichols, 2003). He proposed that ordinary terms for mental or psychological

states could get their meaning similarly, through observation and theory. If we “think of commonsense psychology as a term introducing scientific theory, though one invented before there was any such institution as professional science,” then the “functional definition” account of the meaning of theoretical terms in science can be applied straightforwardly to the mental state terms used in commonsense (or folk) psychology (Lewis, 1972).

In the three decades since Lewis and others developed this account, it has become the most widely accepted view about the meaning of mental state terms. Since the account maintains that the meanings of mental state terms are given by functional definitions (Stich & Nichols, 2003), this view is also known as “functionalism.” The logic behind Lewis’s view, and others like him, is one reason why philosophers of mind have been concerned to understand the exact nature of commonsense (or folk) psychology (Stich & Nichols, 2003). According to functionalist view, folk psychology is the *theory* that gives ordinary mental state terms their meaning.

An interesting caveat to the empirical theory of folk psychology is that it may turn out to be mistaken, which is an inherent plausibility in any empirical theory. The critical point is that folk psychology is an empirical theory that is supposed to explain “the regularity between stimuli and responses” to be found in human (and perhaps animal) behavior. Therefore, it might be discovered that the states and processes intervening between stimuli and responses are not well described by the folk theory that fixes the meaning of mental state terms (Stich & Nichols, 2003). The possibility that commonsense psychology might turn out to be mistaken is granted by just about everyone who takes functionalism seriously.

For the last several decades, many prominent philosophers of mind have been arguing that this situation is more than a mere possibility. Rather, they maintain, a growing body of theory and empirical findings in the cognitive and neurosciences strongly suggest that commonsense psychology is mistaken, and not just on small points (Stich & Nichols, 2003). Staunch supporters of this view, such as Paul Churchland (1981), also known as eliminativists, claim that folk

psychology “suffers explanatory failures on an epic scale” and should be a serious candidate for outright elimination” (p. 76). Churchland does not stop at discarding (or “eliminating”) folk psychological theory. He and other “eliminativists” have suggested that, because folk psychology is such a seriously defective theory, it should also be concluded that the theoretical terms embedded in folk psychology do not really refer to anything.

While it is not the purpose of this thesis to debate the validity of folk psychology, it is important to highlight the controversy about whether mental state terms should actually be used, especially when they are blamed for failures in homeland security. Applying these controversial ideas to complacency, at the very least, supports the purpose of this research to investigate the meaning of complacency further.

D. COMPLEXITY

1. Complexity Theory

This review of complexity theory is intended to describe the nature of the homeland security enterprise. Literature on complexity theory is not lacking. Scholars and scientists offer an impressive amount of literature from a wide array of practitioners, such as economists, physicists, administrators, biologists, and mathematicians.

Complexity theory is a relatively new scientific discipline, founded in the mid-1980s. Two organizations were founded to investigate complexity. In 1984, George Cowan, a research scientist, academician, businessman, and philanthropist, started the Santa Fe Institute in Los Alamos, New Mexico; Stephen Wolfram began the Center for Complex Systems at the University of Illinois in 1986. These institutes became think tanks for scientists and practitioners from nearly every discipline. The findings of their efforts revealed that complexity and complex adaptive systems are present in everything, everywhere. They are in the sciences of physics, biology, sociology, economics, political science, and psychology. They are identifiable in human group and

social interactions, business arenas, and everywhere human beings live and work. They are in the fundamental building blocks of human bodies, and thus, are an inherent element of the human condition.

2. Characteristics of Complexity

The science of complexity, appropriately, lacks a simple definition. It has been used to refer to the study of systems that operate at the “edge of chaos” (also loosely defined concept), to infer structure in the complex properties of systems intermediate between perfect order and perfect disorder, or even as a simple restatement of the cliché that the behavior of some systems as a whole can be more than the sum of their parts (Ziemelis, 2001). However, for the purpose of this thesis, a complex system is one in which numerous independent elements continuously interact and spontaneously organize and reorganize themselves into more and more elaborate structures over time. Complexity is characterized by the following:

- A large number of similar but independent elements or agents
- Persistent movement and responses by these elements to other agents
- Adaptiveness so that the system adjusts to new situations to ensure survival
- Self-organization, in which order in the system forms spontaneously
- Local rules that apply to each agent
- Progression in complexity so that over time the system becomes larger and more sophisticated

Self-organizing complex systems cannot be predicted and they do not observe the principle of reduction, i.e., their components cannot be divided up and studied in isolation. Complex systems can naturally evolve to a state of self-organized criticality, in which behavior lies at the border between order and disorder. The same system can exhibit order, chaos, and self-organizing complexity, depending on the control parameters.

Based on this explanation, the homeland security enterprise is undoubtedly a complex adaptive system. According to the QHSR (2010):

Homeland security is a widely distributed and diverse—but unmistakable—national enterprise. The term “enterprise” refers to the collective efforts and shared responsibilities of Federal, State, local, tribal, territorial, nongovernmental, and private-sector partners—as well as individuals, families, and communities—to maintain critical homeland security capabilities. The use of the term connotes a broad-based community with a common interest in the public safety and well-being of America and American society that is composed of multiple actors and stakeholders whose roles and responsibilities are distributed and shared. As the Commander-in-Chief and the leader of the Executive Branch, the President of the United States is uniquely responsible for the safety, security, and resilience of the Nation. The White House leads overall homeland security policy direction and coordination. Individual Federal agencies, in turn, are empowered by law and policy to fulfill various aspects of the homeland security mission. The Secretary of Homeland Security leads the Federal agency as defined by statute charged with homeland security: preventing terrorism and managing risks to critical infrastructure; securing and managing the border; enforcing and administering immigration laws; safeguarding and securing cyberspace; and ensuring resilience to disasters. However, as a distributed system, no single entity is responsible for or directly manages all aspects of the enterprise. (pp. viii–ix)

Each of these governmental components has their own respective missions, organizational structures, and operational procedures, and operate within the confines of their jurisdictional authorities and statutes imposed by their level of government. Additionally, the inclusion of nongovernmental, private sector organizations, and citizens exponentially increases its dynamism; however, this thesis focuses only on governmental organizations. Despite each working towards individual missions, an overarching unity of effort occurs in which they interact on many different levels to support one common mission. Their success relies on how effectively these interactions happen.

3. Complexity Theory and Organization and Management

Complexity theory has been used extensively in the field of strategic management and organizational studies. A plethora of literature is available that applies complexity theory to management and organizational science from high-reputation scientists and practitioners. Their intention is not to simply import ideas from an emerging interdisciplinary area, but to use them to inform rich, theoretically grounded depictions of how organizations operate (Anderson, Meyer, Eisenhardt, Carley, & Pettigrew, 1999), and how management operates within the organization.

The findings have been significant in organization science; they have emphasized how interaction of elements in a system produces surprising, emergent behavior that can be understood through formal models, even if those models cannot necessarily predict how a given system will evolve. This emphasis constitutes a foundation for a new way of thinking about how to model nonlinear behavior in organizations (Anderson et al., 1999). The findings have also been significant when complexity theory is applied to management theories. Also referred to as “management complexity,” this research serves to inform “organizational complexity.”

a. Complexity Theory and Organizations

The literature reviewed for complexity in organizations is from Philip Anderson (1999), from Amos Tuck School at Dartmouth College. He explains how complex organizations exhibit surprising, nonlinear behavior (p. 216). He argues that complex adaptive system models represent a genuinely new way of simplifying the complex, which are characterized by four key elements: agents with schemata, self-organizing networks sustained by importing energy, coevolution to the edge of chaos, and system evolution based on recombination (p. 216). The strategic direction of complex organizations consists of establishing and modifying environments within which effective, improvised, self-organized solutions can evolve. Managers influence strategic behavior by altering the

fitness landscape for local agents and reconfiguring the organizational architecture within which agents adapt.

Organization theory has not yet caught up with the sophisticated tools that have emerged for analyzing the behavior of complex adaptive systems. “[R]emarkable new vistas are opening up, thanks to the melding of the science of complexity and organization theory” (Anderson, 1999, p. 216) and the increasing availability of new techniques for modeling nonlinear behavior.

Organization theory has historically borrowed from a number of parent disciplines. Because complexity theory has developed along a very interdisciplinary path, it may be that in the end, organization theory contributes as much as it borrows to the development of insight into the behavior of complex systems. Many modern organizations are complex adaptive systems *par excellence*, and we who study them should eventually lead instead of follow efforts to understand the fundamental nature of nonlinear, self-organized structures. (p. 230)

b. Complexity Theory and Management

The review of the “complexity management” consists primarily of the work of Ralph Stacey, Professor of Management and Director of the Complexity and Management Centre at the Business School of the University of Hertfordshire in the United Kingdom (UK), as he is probably considered the most influential in his field. It is important to emphasize that other, differing complexity management works by reputable scholars exist, but they emphasize different aspects of management and different management theories.

According to Stacey (1992), the significance of complexity theory for management is that complexity-based thinking transcends the limitations of pre-existing management theory and practice. Provided that the key finding of complexity theory is the effective unpredictability of the future, the common assumption among managers that part of their responsibility is to decide where the organization is going, to make decisions towards that end, is seen as a dangerous delusion. Management, in the midst of increasing complexity and information overload, can react by becoming quite intolerant of ambiguity.

Factors, targets, and organizational structures all need to be nailed down. Uncertainty is ignored or denied (Stacey, 1992).

In management, responsibility is often considered the enunciation of mission, the determination of strategy, and the elimination of deviation (Stacey, 1992). Stability is viewed as the ultimate safeguard against anxiety, which could otherwise become overwhelming. All these managerial reflexes, many of them seeming commonsensical, are actually counter-productive when viewed from a complexity theory perspective.

In review of how well managed businesses (and the public sector agencies that emulate them) should continue, some basic wisdom is commonly provided. Typically, a Chief Executive Officer should supervise a management team with a vision and strategy supported by a common culture. The organization should stick to its core competencies, build on its strengths, adapt to the market environment, and keep its eyes focused on the bottom line (Rosenhead, 2001). Despite the critical hammering taken by 1970s-style long-term planning, strategic management will nevertheless incorporate the tasks of goal formation, environmental analysis, strategy formulation, evaluation and implementation, and strategic control (Rosenhead, 2001). This way of doing business is completely wrong from the perspective of complexity management.

This kind of management theory and practice, Stacey and others state, bears the hallmarks of the over-rationalist thinking that has dominated since the triumphs of Newton and Descartes (Rosenhead, 2001). An organization is like the universe, a clockwork machine thought to be entirely predictable; good management should enjoy similarly reliable performance. However, discoveries by the theorists of complexity and chaos show that even the universe and natural world do not operate this way; this revelation of creative disorder in the universe needs to be taken to heart by managers. The consequences, as Stacey (1993) comprehensively summarizes, are to turn much management orthodoxy on its head. A few consequences are listed as follows.

- Analysis loses its primacy
- Contingency (cause and effect) loses its meaning
- Long-term planning becomes impossible
- Visions become illusions
- Consensus and strong cultures become dangerous
- Statistical relationships become dubious.

E. HIGH-RELIABILITY ORGANIZATIONS AND RELIABILITY-ORIENTED BEHAVIORS

Jeff Erickson and Lee Dyer (2004) from Cornell University offer literature on high-reliability organizations. Their expertise lies in strategic human resource management (SHRM). Their research includes applying the theory and research on HROs using a behavioral approach. A review of their literature provides a basic understanding of HROs and reliability-oriented employee behaviors (ROEBs) likely to foster organizational reliability. Erickson and Dyer (2004) state that HROs:

[S]trive to achieve virtually problem free performance under the most trying of circumstances....their organizational goals are both unique and quite clear: to avoid disasters, breakdowns, errors and the like....people play a crucial role in helping organizations to achieve high reliability performance. Or, put in the negative, that inappropriate employee behavior tends to be a common cause of organizational failure....that the presence of trying conditions (the complexity of the system, high levels of interdependence between and among people and technology, and external volatility) requires organizing systems (and, thus, employee behaviors) that differ substantially from those used in more stable settings. (pp. 5–6)

The basic principles of HROs (Erickson & Dyer, 2004) include the following.

- Diligence—the capacity to anticipate or detect surprises early and without compromising routine operations
- Facileness—the capacity to switch quickly and easily from stable and routine activity to flexible and novel action and then back again
- Fluidity—the capacity to operate effectively in chaotic situations where traditional order has collapsed

- Generativeness—the capacity to function as a learning organization, gaining knowledge from successes and failures, as well as the experiences of others

Furthermore, review of literature from Erickson and Dyers (2004) suggests that ROEBs are especially valuable to reliability seeking organizations that operate under “trying conditions.” If cultivated correctly, employees that demonstrate these ROEBs will contribute to making an organization successful.

- Diligence. “Diligence refers to an organization’s capacity to anticipate or detect surprises early and without compromising routine operations” (p. 11).
- Ability to ascertain. “People in HROs are chronically on the lookout for the unexpected” (p. 12).
- Communication. “They strive to avoid distortions and misunderstandings by conversing and corresponding in a direct, clear, precise, and accurate manner” (p. 12).
- Facileness. “Requires people to initiate and deploy, to know when and how to switch from one mode of organizing to the other,” between “well planned and practiced response tactics” and “almost wholly emergent processes” (p. 13).
- Ability to initiate. “Initiate appropriate action to mitigate and rectify unexpected events” (p. 13).

1. Challenges of High-Reliability Organizations

This literature is reviewed to provide insight as to the challenges that the homeland security enterprise faces as a HRO. Todd R. LaPorte and Paula M. Consolini (1991) from the University of California, Berkeley have produced literature that focuses on the challenges of public HROs attempting to keep pace with the technological advances. They claim that public administration practitioners and scholars harbor no illusions about organizational perfection (p. 19). They do not expect bureaucracies to be error-free and acknowledge that people make mistakes and machines break. No one is perfect and no organization is likely to achieve this ideal.

Indeed, administrative folklore teaches that error making is the normal bureaucratic condition, yet some organizations must not make serious errors because their work is too important and the effects of their failures too disastrous. This scenario is especially true with organizations that operate very beneficial, yet costly, and hazardous technologies, which is also true for various functions within the homeland security enterprise.

Increasingly, any failure of these technologies is perceived by both their operators and the public to have such potentially grave consequences as to warrant the absolute avoidance of failure. Examples abound: operating nuclear power plants; industrializing genetic engineering; air-traffic control; identifying dangerous drugs; assuring the safety of bridges and dams; using pesticides in agriculture; and, less dramatically, distributing electric power. (LaPorte & Consolini, 1991, p. 19)

While the theme of this literature focuses primarily on introduction of technologies to HROs, valuable, general conclusions for homeland security can be reached.

Current research based tacitly on the trial-and-error, and decisionmaking perspective reinforces unexamined assumptions about what phenomena are important and what problems should be taken up. Much organizational research is driven by practical problems—that is, it is prompted by outcomes that managers, academics, and policy outsiders view as undesirable, unwarranted, and unnecessary. It is attentive to concerns about decisionmaking and policy direction of “machine” bureaucracy without addressing the possibility that organizational life may have gotten beyond our implicit and unexamined understandings of it...A second implication closely follows. Most HROs provide important public services that require operating for long periods at high-peak capacity. Failures of their task and production technologies can be catastrophic—the costs of major failures seem much greater than the lessons learned from them. Public and official concern has grown concerning HRO operations, costs, and safety performance. In responding to these concerns, analysts and policymakers have tended to suppose that behavioral patterns in effective HROs do not vary significantly from those in the more familiar, effective trial and-error organizations. If this were the case, there would be little reason to give special attention to HROs, except perhaps to placate a nervous public. The idea, however, that there is a close similarity between HROs and

trial-and-error organizations is unlikely...Criticisms and proposals for change are likely to underestimate and be underinformed regarding their consequences for organizational operations. Overlooking the requisites for high-reliability organizations and the costs and processes that assure them is a source of major policy error and the roots of tragic remedies. (LaPorte & Consolini, 1991, p. 43)

F. HOMELAND SECURITY DOCTRINE AND REPORTS

This review of homeland security doctrine is intended to accomplish two things, 1) determine the deference complacency is given as a threat to homeland security, and 2) draw conclusions as to the inferred factors of complacency. This literature is reviewed because it is guiding doctrine that steers activities in support of the homeland security mission throughout the entire enterprise. While the White House and the DHS are the primary authors, collaboration among many stakeholders from various disciplines at various levels of government within the enterprise contribute to the final product.

The 9/11 Commission Report stated that the DHS bears the responsibility of assessing threats and determining the adequacy of the government's plans and progress to address and respond to those threats (National Commission on Terrorist Attacks upon the United States, 2004). This statement is further reiterated in the National Security Strategy (The White House, 2010):

Homeland security traces its roots to traditional and historic functions of government and society, such as civil defense, emergency response, law enforcement, customs, border patrol, and immigration. In the aftermath of 9/11 and the foundation of the Department of Homeland Security, these functions have taken on new organization and urgency. Homeland security, therefore, strives to adapt these traditional functions to confront new threats and evolving hazards.

While the DHS has recognized, analyzed, and developed strategies to "confront new threats and evolving hazards," complacency is not clearly addressed in the homeland security mission's core components.

The QHSR states the five core homeland security missions.

- Mission 1: Preventing Terrorism and Enhancing Security
- Mission 2: Securing and Managing Our Boarder
- Mission 3: Enforcing and Administering Our Immigration Laws
- Mission 4: Safeguarding and Securing Cyberspace;
- Mission 5: Ensuring Resilience to Disasters (Department of Homeland Security, 2010, p. 19)

The QHSR also listed nine assumptions about the nation's security environment that influenced the strategic framework to support these missions. One of the assumptions states, “[W]e must guard against the danger of complacency as memories of the 9/11 attacks and other major crises recede” (Department of Homeland Security, 2010, p. 8). The term “complacency” is highlighted in bold; however, it is not mentioned in the rest of the document. Excluding complacency, all the assumptions are explicitly addressed in the five missions' goals and objectives.

The NSHS that preceded the QHSR also referred to complacency:

We must guard against complacency and balance the sense of optimism that is fundamental to the American character with the sober recognition that despite our best efforts, future catastrophes —natural and man-made—will occur, and thus we must always remain a prepared Nation. (The White House, 2007, p. 6)

In this case, it is addressed in more depth, but it is still not defined and it is not demonstrated how preparedness will balance the “sense of optimism” with the “sober recognition” that future catastrophes will occur. Like the QHSR, it is not mentioned in the rest of the document.

G. DEFINITIONS OF COMPLACENCY

To review the technical definitions of complacency, the author has consulted the Oxford English Dictionary (OED), arguably the most regarded source for definitions, and the Merriam-Webster Online Dictionary (MWOD). The OED (2010) provides the following definitions, “The fact or state of being pleased

with a thing or person; tranquil pleasure or satisfaction in something or some one; The fact or state of being pleased with oneself; Tranquil pleasure or satisfaction in one's own condition or doings; Self-satisfaction; Contented acquiescence or consent; Disposition or wish to please, or comply with the wishes of, others," which is a broad range of definitions that demonstrate varying interpretations of the term. The Merriam-Webster Online Dictionary (2011) defines complacency as "self-satisfaction especially when accompanied by unawareness of actual dangers or deficiencies; or an instance of usually unaware or uninformed self-satisfaction."

Some lexicographers argue that dictionary terms are not incontrovertible authority and are best understood by how the terms are used in context. A dictionary is supposed to provide careful analysis of examples of words in use and draw conclusions and consensus on what a word means, but sometimes the definitions are ill suited for stating the meaning of the word (McKean, 2009). Therefore, it is essential to look beyond the dictionary definitions and review how complacency is used in context.

H. COMPLACENCY IN CONTEXT

This literature consists of the aforementioned government documents, journals, weblogs, editorials, and public remarks made by homeland security professionals. In addition to those noted in the introduction, the following are some that were reviewed.

In February 2008, former Secretary Michael Chertoff attended a roundtable sponsored by the *Christian Science Monitor*. This roundtable was summarized and presented as an article in *HS Today*. The author states that during this roundtable, Chertoff warned against "creeping complacency" over the preparedness for all catastrophes (Kimery, 2008). "Complacency is the greatest enemy that we have and the greatest challenge we have" (Kimery, 2008). Furthermore, Chertoff (2008) stated,

We've got a lot more to do ... The biggest [question] my successor will face is, 'Does the public and does Congress have the will to stick to the program, or are we going to start seeing people cannibalize homeland security because we have not been attacked for six years; it doesn't seem like a burning issue anymore. There's a lot of other things we could spend money on, and so, therefore, we will start to allow the progress to be degraded.

These statements imply that a temporal factor is involved in complacency; that complacency increases as time passes. Also, it can be inferred from this statement that "will" is required to work through complacency and complacency can degrade success.

In the same article, the author references how, in May 2005, former U.S. counterterrorism czar Richard Clarke told a homeland security conference in Washington, DC that he feared both the government and public were slipping into a false sense of complacency toward security despite the probability the United States faces another wave of attacks (Kimery, 2008).

It's been 44 months since 9/11 and there is, in some locations around the country and in popular opinion, a growing sense of complacency," Clarke said, emphasizing that "we can't get back to normal. We can never get back to normal. (Kimery, 2008)

This statement includes multiple inferences about complacency. The first is a temporal factor as inferred by providing the quantity of months since 9/11. The second is a location factor, presumably a proximity factor. The third is his warning against returning to normal indicates that normal is analogous to complacency. The fourth is that popular opinion affects complacency. Furthermore, Clarke continues to state,

Someday [terrorists] will come back; there will be a second wave...And if we are complacent—if we think because we've [crossed] out all the names on our chart, if we think that we don't have to reduce our vulnerabilities and improve our security here at home—we will suffer another major attack. (Clarke, 2008)

From this statement, it can be inferred that complacency will persist if the United States minimizes its responsibilities to killing terrorists and does not continue to

reduce this nation's vulnerabilities to improve security. He also implies that complacency will cause another major attack.

Finally, this article on complacency includes a bold statement from Chertoff that provides insight into a culture that breeds complacency.

One thing I am sick and tired of is an approach to everything we do, which is, 'Let's not pay attention until the disaster happens. Then we will have a hearing. We will punish somebody, and then we will spend a lot of money making up for what happened afterwards. (Chertoff, 2008)

In the same vain, the author states:

Chertoff isn't the only government official to make this observation, though—I've heard the same thing from the mouths of many; that it's only after a calamity that remedial action is, or will be, taken. I remember David Kay, the former chief of the CIA's hunt for WMDs in Iraq, telling me back in the mid-90s that he didn't know how many high-level meetings he'd participated in that discussed terrorist attacks and other assorted nightmarish catastrophic events that could potentially kill tens of thousands of Americans the conclusion of which was, basically, nothing would be done until after the fact. (Kimery, 2008)

It can be concluded from these statements that complacency instills a reactionary attitude; conversely being proactive is opposed to complacency.

During remarks made to the National Cargo Security Council, James Loy (2004), former Deputy Secretary of the DHS, spoke of a "complacency gene" that leads everyone to have the "tendency to default into a careless loss of focus." This figure of speech implies that complacency is inherent in people and causes a careless loss of focus. He further states:

We now have another year's worth of attacks—in Madrid, Istanbul, Baghdad, and in Saudi Arabia—that indicate we must continue to fight that complacency and maintain an unprecedented level of vigilance in everything we do...our emotions must not be dulled by the passage of time. (Loy, 2004)

This statement implies that a temporal factor exists to complacency, that complacency will increase with time, complacency is an emotion, and suggests

that vigilance is antonymous to complacency. “We must hold onto our sense of urgency. Of course, despite many successes, there is still plenty of work left to be done. As I mentioned, complacency cannot allow us to rest long on past accomplishments. Instead, we must continue to look for opportunities to work together.” (Loy, 2004). Loy implies that holding on to a sense of urgency will counter complacency and successes of previous accomplishments can induce complacency.

In an opinion piece published on FoxNews.com, Judith Miller (2010), who is an author and commentator of Fox News, contributing editor of “*City Magazine*” of the Manhattan Institute, and Pulitzer prize-winning investigative reporter for the *New York Times*, claims that complacency is “our greatest threat.” This piece argues against the reduced funding of the Transit Security Grant Program for New York City in 2010. She states, “Vigorous counterterrorism effort requires consistent support. That’s tough almost nine years after 9/11 without another major successful attack on American soil. Success breeds complacency—our greatest threat” (2010). It can be deduced that this usage demonstrates a temporal factor and that previous success is a contributor to its manifestation. The persuasive manner in which it is used also suggests that complacency can be employed as a political term.

In “The Relationship of Warning and Response in Homeland Security,” John Brinkerhoff (2001), senior editor of the *Journal of Homeland Security*, claims that it is an American tradition to be “surprised” by major events, such as 9/11, but asserts that Americans would not be surprised at all if it were not for complacency and other human errs. He emphasizes the direct correlation between complacency and the ability for homeland security to commit to a swift and effective response to warnings that are out there about impending attacks on the United States.

Furthermore, Brinkerhoff (2001) provides a definition of the complacency as being the “attitude of self-satisfaction that inhibits consideration of unpleasant things,” which fosters the inertia of the status quo. He contends that complacency

is a good thing or a bad thing depending upon who is being complacent and it can be an indicator of success for those responsible for homeland security, and it can be problematic if it is the prevalent attitude of people required to pay constant attention to unpleasant things.

The bulk of the people are complacent, and in a well-ordered society have good reason and every right to be complacent...[I]n one sense, the main goal of an effective homeland security program is to afford ordinary citizens the luxury of complacency about their security...Complacency is a problem when it is the prevalent attitude of persons whose duty requires constant attention to unpleasant things. (Brinkerhoff, 2001)

He claims that complacency results out of habit and attitude when boredom sets in and attention is on other things.

Brinkerhoff (2001) further states that homeland security practitioners responsible for emergency preparedness must never be complacent. His recommendation to address complacency is super dedication to preparedness by those in charge of the governments, institutions, and corporations of America because if leadership demonstrates complacency, so will those who work for them. Finally, he explicitly states that complacency is a result of self-satisfaction (Brinkerhoff, 2001).

On May 5, 2009, during a media briefing, Secretary Napolitano (2009) stated her cautious optimism about the how the knowledge the Center for Disease Control was giving them a better understanding of the H1N1 virus and the guidance on school closings had changed. She stated:

This is not a time for complacency or the belief that we can simply declare victory over H1N1 and move on...This is why we are preparing now for what may come in the future. We are not in a place where we can simply sit back and see what happens. We have to lean forward. And we have to remain prepared because nature has a way of being little unpredictable and throwing us a curveball from time to time. (Department of Homeland Security, 2009)

This mention of complacency indicates that focus, working together, and preparedness will counter its effects.

I. FACTORS OF COMPLACENCY

1. Psychological and Biological Factors

Based on the inherent nature of complacency, as implied by former Deputy Secretary Loy and others, it is advantageous to explore the psychological factors that influence complacency in more depth. To gain an informed understanding of these factors it is necessary to review literature about some already defined concepts of psychology, such as self-efficacy and optimism bias. In the *Encyclopedia of Human Behavior*, world-renowned behaviorism Psychologist Albert Bandura (1994) defines self-efficacy as people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that determine how people feel, think, motivate themselves, and behave. In summary, this scholarly literature concludes that people believe they have the ability to affect the outcome of a situation and believe that they can make the result one in which they desire it to be.

Scholarly references of optimism bias are found in a broad range of literature to make sense of why, for example, people expect to live longer and be healthier than average, they underestimate their likelihood of getting a divorce, and overestimate their prospects for success on the job market. It is the tendency of people to be over-optimistic of the outcomes of planned actions. According to this literature, accepted broadly by psychologists, people are naturally prone to be optimists even *with* knowledge of prevailing threats. The findings of a recent study conducted at the University of Kansas (2009) finds that "Despite calamities from economic recessions, wars and famine to a flu epidemic afflicting the Earth...humans are by nature optimistic." These psychological studies and behavioral research suggests that homeland security practitioners may be naturally prone towards optimism bias despite awareness of dangers.

Self-efficacy and optimism bias can contribute to an attitude of complacency. Individuals' high optimism (optimism bias) about the outcomes they have the ability to effect (self-efficacy) can lead to a feeling of confidence or self-satisfaction. Self-satisfaction is part of the technical definition of complacency, as well as what Brinkerhoff concluded.

Some literature suggests that the psychological factors that can contribute to complacency have a biological basis. In *Nature, International Weekly Journal of Science*, a study about the optimism and neurology shows that activity in two limbic areas of the brain, the rostral anterior cingulate cortex and amygdale, reflects an optimistic attitude (Phelps, 2007). This literature scientifically demonstrates that people may have a natural predisposition towards complacency, assuming that optimism is a psychological factor that contributes to it.

2. Situational and Environmental Factors

The contextual examples of complacency imply that a temporal factor exists to complacency. The following literature provides possible explanation for this factor. Christopher Bellavita (2005), executive editor of *Homeland Security Affairs*, discusses the issue attention cycle by describing the cyclical evolution of homeland security in public opinion and government action regarding attacks and threats. The temporal significance is that some issues follow five predictable stages.

- Stage 1: Preproblem
- Stage 2: Alarmed discovery—Entails a euphoric enthusiasm to do something quickly about the problem and is triggered by an especially dramatic event
- Stage 3: Awareness of the costs of making significant progress
- Stage 4: Gradual decline of intense public (including public leaders) interest in the problem. Some people become discouraged about how long it is going to take to “solve” the problem. Others become bored with it or move on to other, more immediately pressing, concerns.

- Stage 5: Post-problem stage

Further review of stage four, “the public—including public leaders—gradually loses interest in the problem” supports that as time moves forward, the sense of urgency that Loy referenced diminishes. It can also be phrased, “as time move forward complacency increases,” just as Chertoff insinuated in his warning against “creeping complacency” (Kimery, 2008).

Another factor of complacency can be found in the environmental construct of complex organizations. An emphasis on organizational construct and management is discussed in “The Danger of Complacency” on the *Washington Post* website. A group of 13 West Point Cadets and four of their instructors wrote this discussion article in which they address complacency in complex organizations. Specifically, in response to the question they were asked about how an organization (General Motors (GM)) could be revived in two years. Their response was,

When a group of individuals work together for quite some time, the environment becomes comfortable. Unfortunately, a comfortable environment brings contentment, stagnation and group think. Before long, there is no striving for advancement or progress. In the army, leadership is continuously cycled....This consistent leadership change keeps unit atmosphere continuously fresh, preventing complacency issues like GM had. (West Point Cadets, 2010).

This literature suggests that organizational policy and management can affect the environment that fosters complacency. Homeland security agencies are complex organizations akin to GM and the military that can benefit from understanding complacency affected by the environment.

J. COMPLACENCY RESEARCH IN AVIATION INDUSTRY

Research conducted by esteemed social scientists in the aviation industry may provide valuable insight on how to address complacency in homeland security. The connective threads between aviation and homeland security are that both are affected by human performance and attitude and layers of people

have different responsibilities that must work towards one mission. The relevance of applying this research is that upon assessment of failures, or warning against potential failures, in homeland security, the attitude of complacency is blamed as it often is in the aviation industry.

An abundance of literature is available from psychologists, social scientists, cognitive scientists and behaviorists about complacency in the aviation industry. This literature is provided in the form of scholarly books, journals, articles, and presentation material at significant conferences. The literature provides a summary of human factors science (the aviation industry was the chief contributor to the development of the human factors discipline over the last several decades), and current statistical research, analysis, and recommendations to address complacency within aviation organizations and training programs.

1. Accident Investigations

The aviation industry enjoys little margin for error and accident investigations consistently reveal that “complacent” human performance is responsible for a series of human errors, or chain of events, that accumulated and result in an accident. Complacency is identified as one of the dirty dozen of human factors in the aviation maintenance industry. Blue Tuna, a human factors, code of federal regulations and occupational safety and health administration training provider, interviewed repair station managers, technicians, quality managers and FAA inspectors, and across the board, complacency ranks as one of the dirtiest dozen (Blue Tuna, 2010).

Research shows a 20/80 ratio of accidents is attributed to human errors induced by complacency—20 percent of accidents are caused by a machine, whereas 80 percent are caused by some human element (Grey Owl Aviation Consultants, 2004). This staggering statistic has warranted scholarly investigation by social scientists as to what complacency in aviation is. Their deductive hypothesis is that if an error is part of a chain of events that led to an

accident, diffusing the judgment that led to the error can prevent the accident. Their research has led to a specific focus on human factors in training programs and changes in organizational construct (Grey Owl Aviation Consultants, 2004).

2. Complacency in Aviation

For the purpose of this thesis, complacency in the aviation industry is, “A mental state where an aviator acts, unaware of actual danger or deficiencies. He still has the capacity to act in a competent way—but for some reason, or another, this capacity is not activated. He has lost his guard without knowing it” (Fahlgren & Hagdahl, 1990).

Complacency is caused by the very things that should prevent accidents, factors like experience, training and knowledge contribute to complacency. Complacency makes crews skip hurriedly through checklists, fail to monitor instruments closely or utilize all navigational aids. It can cause a crew to use shortcuts and poor judgment and to resort to other malpractices that mean the difference between hazardous performance and professional performance. (Wiener, 1981)

Symptoms of complacency include the following:

- Acceptance of lower standards of work performance
- Degradation of feeling to remain knowledgeable and proficient at work
- Increased boredom and Inattention to tasks
- Acceptance and satisfaction with current conditions at work
- Increased feeling of well being even if tasks are building up
- Neglect of important safety itinerary at work

Richard S. Jensen Ph.D. (1995), a former pilot, editor of *The International Journal of Aviation Psychology*, and director of the Aviation Psychology Laboratory at The Ohio State University, has written many comprehensive books on pilot judgment. In one of his books, *Pilot Judgment and Crew Resource Management*, he provides a clear understanding of pilot judgment by emphasizing how it can be applied to improving safety in aviation. Specifically, he

delves into complacency and concludes that five types of complacency exist (Jensen, 1995):

- Task Induced Complacency—This type of complacency includes the following key components and characteristics:
 - Occurs after a high key period of intense, mental stimulating and skill induced workload
 - Occurs when personnel are operating in a low key setting, and having the mindset that the “worst is over,” tasks faced seem routine and mundane
 - Occurs when vigilance of personnel is reduced significantly and guard is let down
 - Occurs when personnel forget certain details performing their tasks
 - Occurs when personnel are not able to react appropriately to new and sudden injects

Examples of task induced complacency are pilots, after a long haul flight in treacherous weather conditions, on final approach in good weather, execute a wheels-up landing. Also, in the air traffic control tower, after a heavy session, directing continuous traffic flow into and out of the terminal area, now faced with only two aircraft in the airspace forgets to monitor the height altitudes properly leading to a confliction.

- Organization induced complacency—This type of complacency includes the following key components and characteristics and stresses how management plays an important role in preventing complacency:
 - Occurs when poor management fails to hold people accountable for their wrong actions at work
 - Occurs when management becomes satisfied with mediocre performances
 - Occurs when workers have the propensity to break rules and take short cuts in performing their tasks assuming they will not be punished
 - Occurs when this sub-par working style becomes a norm
 - Occurs when non-productive workers are permitted to continue working and keep making errors

- Occurs when personnel stop reporting errors and mistakes at work
- Occurs when productive workers who are creative and care for the company will soon also become complacent at their tasks

An example of organization-induced complacency is lazy maintenance personnel who do slipshod work in a short amount of time; hence, finishing their mistake ridden tasks of the day so they can go home early, and at the same time, earn the same pay as dedicated workers. These dedicated workers who are meticulous and work long hours to ensure rectification of aircraft is proper will soon also develop the wrong attitude since management is not penalizing the errors and behavior that are occurring.

- Fatigue/stress induced complacency—This type of complacency includes the following key components:
 - Workers are faced either with fatigue or stress due to external factors, such as insufficient sleep and marital problems
 - Workers are not in the right frame of mind to work
 - Workers are not as meticulous and pay less attention to certain seemingly mundane tasks
 - Workers become complacent and start beginning to see or hear what they expect to see or hear in a given scenario instead of what is actually transpiring in the real time scenario

An example of fatigue/stress induced complacency is a fatigued pilot lining up on the runway, expects a takeoff clearance, and upon hearing the controller's voice, assumes it is for takeoff and fails to hear and read back air traffic control clearance properly, then proceeds to take off with a vehicle on the runway. In the same context, a stressed controller upon telling a pilot to line up and wait neglects to look at the aircraft and remains fixated on the vehicle on the runway, as he expects the pilot to wait and not to take off.

- Dependency complacency—This type of complacency includes the following key components and characteristics:

- One is working alongside personnel known to be capable, dependable, and proficient at their jobs
- Workers doing similar tasks will have the tendency to become lazy and complacent
- One experiences misplaced confidence because the co-worker is the consummate professional who will be able to catch any mistakes
- Workers do not do their own work properly and conscientiously, and rely on co-workers

An example of dependency complacency is when in a cockpit environment, maintenance workers have a tendency to neglect basic duties and not follow proper standard operating procedures (SOPs) because they feel that a partner is always available who is up to speed to counter check them.

- Automation and complacency—This type of complacency includes the following key components and characteristics:
 - Occurs when there are advancements in technology
 - Occurs when there are changes in the roles from main operators in control of the systems to merely supervisory roles
 - Occurs when personnel take less ownership as they are lulled to thinking that the computer will not make mistakes and will perform everything well

An example of automation complacency is not monitoring instruments or gauges in the cockpit properly, and even if they are sending out wrong signals, failure to act as the computer is more sophisticated and is always right.

After describing the different types of complacency, Jensen (1995) offers ways to counter complacency.

- Maintain Awareness: Keeping aware of the surrounding situation by rehearsing in the mind the consequences of complacency by reading accident reports in a person's given profession
- Adopt a Positive Attitude: Adopting a positive attitude by becoming more professionally involved at work, reading up-to-date materials to level up knowledge of them
- Manage Expectations: Going through contingency checklists and repeating them to avoid hearing or seeing what is expected to be heard or seen, which can be done by saying these checklists aloud

- Maintain Current Training: Even if deemed proficient, go through different training and seek to improve by asking other people who may know more and offer a different insight. Recurrent training to hone skills, and refresh knowledge and training in different scenarios to be well equipped in dealing with them.
- Create New Challenges: Create challenges by working with another person in competing who will make the least mistakes and trying to catch the other person's mistakes will improve standards and reduce complacency
- Ask 'What If?': Ask what if this goes wrong when performing tasks, so that the mind is stimulated and mentally prepared to deal with unforeseen scenarios
- Critique Performance: Continuously critique performance by striving for the perfect way to do things. Constantly try to be better when getting things done.
- Maintain Physical fitness: Good physical fitness levels builds up the necessary endurance to protect against stress and fatigue induced complacency so that good decisions can be made and small details are not neglected

3. Complacency in Organizations

NASA has also conducted extensive research on complacency. Steve Denning (2006), formerly the program director, knowledge management, at the World Bank, advises organizations on knowledge management and organizational storytelling. He is an author on leadership, business and innovation, and recipient of the Teleos Most Admired Knowledge Leaders Award. He published an article in *Ask Magazine*, the NASA source for project management and engineering excellence, on "Challenging Complacency." He argues that the first step in addressing complacency is to recognize how "deep rooted" and "intractable" it is.

Denning (2006) offers common assumptions and behaviors that promote complacency.

- Excessive reliance on prior success: The more often a particular routine achieves a successful outcome, the more likely people are to develop an unwarranted belief that success is assured. The

reality is that the opposite is true where random risks are involved; the probability of risk materializing increases over time. (p. 47)

- Arrogance of experts: Disdain for laymen or for experts in other fields is a perennial tendency of the expert. The fact that the expert is right more often than the laymen can lead to the illusion of always being right. (p. 47)
- Over-accentuation of the positive: Management is an action-oriented activity. The can-do mind-set necessary for getting things done may discourage listening to nay-sayers and skeptics, even when their viewpoints have merit. Nevertheless, most high-value knowledge lies in negative narratives that reveal the pitfalls, difficulties, and obstacles that lie in the way of success. Since such narratives can be seen as a threat to management plans and objectives, fear of negative career consequences can hamper their dissemination. (p. 47)
- Over-reliance on technology: Technical specialists have a tendency to believe in the infallibility of their technology, particularly in areas in which they have some knowledge and control. This belief can be a serious problem for computerized safety systems, which can generate a false sense of infallibility. (p. 47)
- The Black Swan bias: People tend to discount the possibility of unprecedented risks. As all the swans they have seen are white, they assume black swans do not exist. A black-swan event is beyond the realm of normal expectations and tends to be discounted, even by experts. The difficulty of learning from black-swan events is compounded by the fact that they rarely repeat. Learning from the discovery of one black swan that black swans are possible does not prepare anyone for, say, a platypus. (p. 47)
- Groupthink: Groupthink occurs when people are deeply involved in a cohesive group whose striving for unanimity overrides a realistic appraisal of alternative courses of action. Large organizations often exhibit symptoms of groupthink, including illusions of invulnerability and a sense of superiority, collective rationalization, and stereotyping of outsiders as uninformed, ignoring contrary data, suppressing alternative viewpoints, and shielding leadership from dissent. (p. 47)

Denning (2006) further outlines strategies for dealing with complacency and expands on the strengths and weaknesses of each strategy. The approaches include the following.

- Changing the organizational structure
 - Force attention on often ignored important issues

- Give some autonomy to analysts, independence from managers to reduce fear in presenting findings
 - Establish pathways for professional dissent
 - Introduce structured approaches to managing risk
 - Create oases of safety through communities of practice
- Upgrading the quality of discourse
 - Use analysis to get the best handle on known issues
 - Use narrative techniques to expand the range of issues to be addressed. Narrative techniques can help open up previously unimagined risks and reveal the nuances and interconnections of apparently unconnected risks. (p. 48)
 - Introduce *pre-mortems*; ask planners to imagine that their plan has been executed, and that it has failed, and to think about what might have caused the failure. Where the issues involve human behavior, role-playing and simulations can help overcome the problem of the time lag in learning from real-life experience in complex situations. Research shows that role-playing can yield more accurate predictions than expert forecasts. (p. 48)
 - Take active steps to enhance the flow of debate
- Enhancing organizational value: Neither structural approaches nor steps to enhance dialogue are likely to be effective unless they are aligned with organizational values
 - Actions of top management are key
 - Values are usually established in situations in which leaders must deal with adversity
 - Establish and disseminate organizational values as a powerful way of inculcating a capability to deal with difficult issues throughout the organization
- Getting ready for the unexpected: “Organizations need to prepare for unanticipated risks. After all known risks have been planned for and the right structures, discourses, and values put in place, they need to be prepared for issues that haven’t been anticipated.” (p. 50)
 - Develop a capability to swarm, or decentralize decision making
 - Invest in redundancy. Build extra capacity and backup

- Transformational innovation: “Management often involves trying doing “more of the same” but doing it better, more quickly, and more economically. Innovation is about doing something completely different. In a sense, innovation is the opposite of management and requires dissimilar techniques” (p. 50)
 - Innovate for survival when there are fundamental challenges in the environment
 - Adjust to the external environment
 - Do not rely on knowledge

Figure 2 summarizes Denning’s (2006) recommended approaches for dealing with organizational complacency.

APPROACHES FOR FIGHTING ORGANIZATIONAL COMPLACENCY	STRENGTHS	WEAKNESSES
CHANGING THE ORGANIZATIONAL STRUCTURE	CAN usually be implemented by organizational fiat; generate consistent and explicit exposure of the issues with clear accountabilities	CAN be rigid, as the efficacy depends on the quality of the discourse that takes place within the structures
UPGRADING THE QUALITY OF THE DISCOURSE	FLEXIBLE and generally low cost	HARD to institutionalize; efficacy depends on organizational values
ESTABLISHING AND DISSEMINATING ORGANIZATIONAL VALUES	INCULCATES capability to deal with issues throughout the organization	VALUES may no longer be relevant in a radically different environment
PREPARING FOR THE UNEXPECTED	GENERATES flexibility and creativity, leading to efficient solutions to seemingly insoluble problems	ASSUMES that reliable knowledge is not available; may encourage excessive use of improvisation
TRANSFORMATIONAL INNOVATION	CAN save an organization from irrelevance and death; requires courage, imagination, smarts, and strong leadership	RELIABLE knowledge is not available; involves high risk

Figure 2. Steps to Fighting Organizational Complacency

Finally, Denning (2006) concludes:

In any large organization, the struggle against complacency is an unending battle. All avenues reviewed in this article need to be exploited, including structural approaches to enhancing the sharing of knowledge, steps to enhance the quality of the dialogue that takes place within those structures, strenuous efforts to establish and transmit appropriate organizational values, explicitly preparing for the unexpected, and creating a capability to undertake transformational innovation. Organizations cannot entirely eliminate risk or complacency, but serious and thoughtful efforts to counter

complacency can help bring dangers to light and reduce the likelihood of failure. (p. 51)

4. Human Factors and Folk Models in Aviation

Research on complacency in the aviation industry has also led to the conclusion that the general term should not be used due to the nature of folk science that led to its meaning. In *Human Factors and Folk Models*, Sidney Dekker and Erik Hollnagel (2004), Professors of Human Factors and Flight Safety at the School of Aviation at Lund University discuss the consequences of labeling concepts to describe a broad range of human behaviors. According to Dekker and Hollnagel (2004), human factors and folk science have led to many concepts that express the insights of the functional characteristics of the human mind that attempt to depict complex human behavior (Dekker & Hollnagel, 2004). For instance, one of the causalational concepts often found in accident reports in automated industries is “automation complacency.”

This propensity to develop concepts that involve human factors, they argue, prevents further investigation into the psychological mechanisms that might be responsible for the behavior because the concepts have become intuitively meaningful in the sense that everyone associates something with them. Therefore, they feel they understand what the concept is and do not investigate further. Furthermore, Dekker and Hollnagel (2004) purport that the dangerous consequences developing such concepts for human factors and the underlying complex human behavior, could lead to the syndrome of “The Emporer’s New Clothes.” People may no longer ask what these labels mean, lest others suspect they are not really initiated in the particulars of their business (Dekker & Hollnagel, 2004).

Folk models substitute one big term for another instead of defining the big term by breaking it down into more little ones (in science we call this decomposition, or deconstruction)... Folk models are difficult to prove wrong, because they do not have a definition in terms of smaller components, that are observable in people’s real behavior. Folk models may seem glib; they offer popular, but not necessarily helpful, characterizations of difficult phenomena...Folk

models easily lead to over generalization...You are not bound to particular definitions, so you may interpret the concepts any way you like. (p. 80)

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V. ANALYSIS

Success requires enough optimism to provide hope and enough pessimism to prevent complacency.

—David G. Myers, *Exploring Psychology*

The previous chapter introduced an abundance of literature that was reviewed to provide a baseline understanding for this human factors-oriented approach into enhancing the resiliency of the homeland security enterprise. This chapter analyzes the literature in a manner such that conclusions can be drawn about the nature, technical definitions, and usage of complacency in context.

A. FOLK PSYCHOLOGY DEBATE

The usage of the term complacency falls within one of the major philosophical questions, the problem of other minds. How is it possible to know about the mental states of other people? The most commonly accepted answer to that is the theory of folk psychology, a psychological theory constituted by the platitudes about the mind ordinary people are inclined to endorse. It is the theory that gives ordinary mental state terms their meaning. According to folk psychology, terms, such as “complacency,” develop and evolve within cultures, are passed on as memes, and become accepted as “common wisdom.”

In the previous chapter, a review of literature on folk science and folk psychology introduced a debate about the validity of this theory and draws into question whether terms used to describe mental states should be used at all. In short, from the verificationist perspective, some cognitive scientists and philosophers of the mind believe that the theory of folk psychology is a valid foundation for applying general terms to describe complex human behavior and mental states of mind. They validate it using both theory and observation, and name these terms “functional definitions.” This justification draws from empirical theories validating empirical science. On the other end of the spectrum,

eliminativists claim that it, and everything that results from it, should be stricken of any credibility in describing mental states. Simply stated, the theory of folk psychology is based on an empirical premise and any empirical premise is subject to be mistaken. Therefore, since folk psychology is such a seriously defective theory, it should also be concluded that the theoretical terms embedded in folk psychology do not really refer to anything. This debate continues to increase as new discoveries about the scientific understanding of the mind and brain emerge in psychology and the neurosciences.

Although it is not the purpose of this thesis to debate the validity of folk psychology, it is important to highlight the controversy, should mental state terms be used at all? Pertaining to this thesis, this controversy begs the question as to whether “complacency” should be used in homeland security, and given so much credibility that homeland security professionals are constantly warning against it. At the very least, highlighting these controversial perspectives draws attention to the possibility that using “complacency” may not capture what the intended message is. This paradox supports the purpose of this research for further investigation as to its real meaning for the discipline, and explores its factors and attempts to define a concept that can be comprehended beyond blanket, arguably, vacant terminology.

B. THE COMPLEX, HIGH-RELIABILITY HOMELAND SECURITY ENTERPRISE

The previous chapter reviewed complexity theory and its application in organization science and management. In short, a complex system is one in which numerous independent elements continuously interact and spontaneously organize and reorganize themselves into more and more elaborate structures over time. They cannot be predicted and they do not observe the principle of reduction; they can naturally evolve to a state of self-organized criticality in which behavior lies at the border between order and disorder.

Analysis of this section reveals that the homeland security enterprise is undoubtedly a complex, HRO. A HRO is an organization that relies heavily on people to provide critical services or functions that strive to be error-free. Analysis also concludes that management, interaction among various components within the organization, and certain employee behaviors, are critical to the success of organizations that display such complexity. Therefore, as a complex HRO, the homeland security enterprise can optimize performance, and thus prevent complacency, by careful and deliberate improvements to organizational structure and management knowledge, and cultivating desirable reliability-oriented employee behaviors.

C. TECHNICAL DEFINITIONS

It is not uncommon for words to have a variety of definitions due to their usage in different contexts or applied to different scenarios. Nor it is uncommon that words have multiple, diverse definitions. However, when consulting dictionaries, such as the OED and Merriam-Webster, it is assumed that their definitions are somewhat authoritative. In the review of OED definitions for complacency, seven entries with a wide variety of insinuations were found. Common descriptors among the OED definitions are pleasure, satisfaction, contentment, consent and compliance (Oxford English Dictionary, 2010). Conversely, the MWOD (2011) provided a definition very different from the OED, “Self-satisfaction especially when accompanied by unawareness of actual dangers or deficiencies.” While some of these descriptors may capture the intent of using it in homeland security, some, like pleasure, do not initially make sense. For the purpose of this thesis, it is assumed that the MWOD definition is more applicable.

The MWOD definition has applicable implications when applied to homeland security. Firstly, self-satisfaction indicates a smugness and contentment with an individual’s accomplishments. This definition could be relevant to an intelligence analyst who has successfully uncovered a terrorist plot

or incident commanders who conduct a well-managed response to an incident, and developed arrogance about their abilities that affects future performance. Secondly, unawareness indicates the inability of sensing problems if satisfied with the current state of affairs. In homeland security, which may be an intelligence analyst viewing injects of information as random and failing to recognize a pattern that may reveal a significant threat, or a key stakeholder not receiving relevant information about the threat environment.

These definitions make it possible to draw several conclusions about the characteristics of complacency and can be applied to the homeland security discipline, but the manner in which homeland security professionals commonly use it, suggests that a more complex meaning of the concept exists. Therefore, further analysis of how, why, and when it is used by homeland security professionals can provide better insight into developing an applicable concept for the homeland security discipline.

D. CONTENT ANALYSIS OF COMPLACENCY IN CONTEXT

Although a dictionary is supposed to provide consensus on what a word means, sometimes the definitions are ill suited for providing the meaning, as was demonstrated by the OED's definitions when applied to the homeland security discipline. In accordance with the thought of some lexicographers that dictionaries are not incontrovertible authority, the literature review of complacency in context was executed to best understand the term, as it is specifically applicable to the homeland security discipline.

Utilizing content analysis for “complacency” in the homeland security context provides the methodology to quantify and analyze its usage, infer meanings and relationships, then make assumptions about the message within the texts, writers, audience, and even the culture and time of which these are a part. This approach was accomplished by coding, or breaking down the text into manageable categories on a variety of levels: word, word sense, phrase,

sentence, or theme, and then examining the results using conceptual analysis, a basic content analysis method.

1. The Nature of Complacency

Analysis of the way complacency is used in context concludes that complacency is an emotion inherent within a person and is exhibited through certain behaviors. Although inferred by many of the references, Loy (2004) distinctly stated that a “complacency gene” existed. This figurative use prompted the exploration of the psychological factors that can contribute to complacency that are discussed later.

2. The Temporal Factor

The most common attribute of complacency gleaned from the way it was used in context was a temporal factor. Almost all the statements reviewed referred to the prevalence of complacency as time passes from a significant event, most notably 9/11. For instance, former Secretary Chertoff stated, “[A]re we going to start seeing people cannibalize homeland security because we have not been attacked for six years; it doesn’t seem like a burning issue anymore” (Kimery, 2008). This statement among many others insinuated that vigilance will wane and complacency will set in as time moves forward from a major attack.

3. The Geographic Proximity Factor

Comments by Richard Clarke, former U.S. Counterterrorism Czar, implied that complacency also has a proximity factor. He stated, “It’s been 44 months since 9/11 and there is, in some locations around the country and in popular opinion, a growing sense of complacency” (Kimery, 2008). This reference to locations insinuates that varying levels of complacency depend on where an individual resides or works within the country, which suggests that people who work or reside in certain areas of the country not considered high-risk areas may have an increased likelihood of displaying complacency.

4. The Organizational and Responsibility Factor

Similar to the proximity factor based on geography, the proximity factor is also applicable to where individuals fall within the homeland security enterprise, and differs based on their responsibilities. Homeland security professionals will exhibit varying degrees of complacency depending upon what their responsibilities are and where they fit in the enterprise. For instance, an intelligence analyst working in the National Capital Region at the National Operations Center with top-secret access to intelligence, real-time status updates of impending threats, and is responsible for briefing the Director of National Intelligence on the current threat environment, may be less likely to exhibit complacency than a chief of police in a small rural town far away from a high-risk, high-target area.

5. Indicators of Complacency

Analysis of complacency in the homeland security context revealed indicators of complacency. Recognizing and identifying the signs of complacency would be helpful to initiate efforts to combat it and possibly prevent problems to which it leads. According to Brinkerhoff (2001), complacency results out of habit and attitude when boredom sets in and attention is on other things. Research on complacency in the aviation industry also refers to boredom and inattention to tasks as a “symptoms” of complacency.

6. Contributors to Complacency

Content analysis of the literature also revealed that complacency is comprised of a category of contributors. The most commonly referenced contributor was successes of previous accomplishments. It was also stated that complacency is a result of self-satisfaction. Logically, this statement makes sense if a direct correlation exists that previous success results in self-satisfaction, which is further supported by the definitions found in the dictionaries.

Additionally, Loy (2004) stated that complacency arises because people have the tendency to “default into a careless loss of focus.” This statement refers to a natural tendency further explored in the nature and psychological factors of complacency. Finally, Clarke (2008) had suggested that popular opinion affects complacency. Popular opinion is the beliefs or sentiments shared by most people, which insinuates people’s susceptibility to be influenced by others and is also supported by Denning’s reference to groupthink.

7. Combating Complacency

In addition to providing indicators and effects of complacency, ways to combat complacency were also deduced by the way complacency is used in context. Various statements suggest that being proactive and vigilant will oppose complacency, and to maintain vigilance, it is necessary to create a sense of urgency constantly.

Other ways to combat complacency include, will, focus, working together, and preparedness.

In regards to leadership, super dedication to preparedness by those in charge of the governments, institutions, and corporations of America, is imperative because if leadership demonstrates complacency, so will those who work for them. This concept is further supported by the analysis of management in complex organizations and the aviation industry’s proposal of organization induced complacency.

Former counterterrorism czar Clarke offers a different perspective (Kimery, 2008). He reiterates that it is essential to be cognizant that this country’s responsibilities are great, wide, and continuous, and claims that complacency will persist if this nation minimizes its responsibilities to killing terrorists.

8. Effects of Complacency

After analyzing the indicators of complacency, it is also important to analyze the effects of complacency to provide further insight as to why it is considered a threat and constantly warned against by homeland security professionals. Statements reviewed by former Secretary Chertoff indicates that complacency instills a reactionary attitude and can degrade success. Brinkerhoff (2001) claims complacency fosters the inertia of the status quo. All these effects are contradictory to the homeland security mission. Homeland security professionals are responsible for planning, training, and exercising in advance of disasters or terrorist attacks to promote the best response to an incident, not adopt a “wait-and-see attitude.” Some professionals are also responsible for creating innovative technologies, innovative problem solving, and developing innovative ways to analyze threats. This concept is the opposite of maintaining the status quo and the prevalence of these effects can be detrimental to the success of the homeland security enterprise in fulfilling its mission in a world that is constantly changing and evolving. To this end, Brinkerhoff (2001) boldly suggests that complacency will cause this nation to suffer another major attack.

E. COMPLACENCY DEFERENCE IN DOCTRINE

The paramount documents reviewed to assess the deference of complacency in homeland security were the 2010 QHSR and the NSHS that preceded the QHSR. These documents were selected because over the past decade, they have been the guiding doctrine that has steered activities in support of the homeland security mission throughout the entire enterprise. Analysis of these documents revealed incongruent deference to complacency in the homeland security mission.

The QHSR states that nine assumptions about the nation’s security environment must be considered when developing the five, core homeland security missions. Most of the assumptions are explicitly addressed within at least one of them. The last assumption listed states, “[W]e must guard against

the danger of complacency as memories of the 9/11 attacks and other major crises recede" (Department of Homeland Security, 2010, p. 8). The term "complacency" is highlighted in bold; however, it is not mentioned in the rest of the document or addressed in the five missions' goals and objectives. Examples of other assumptions include the continuation of violent extremist groups, technological advances and cyber threats, and the threat of global climate change. Respectively, Mission 1: Preventing Terrorism and Enhancing Security addresses violent extremist groups, Mission 4: Safeguarding and Securing Cyberspace addresses enhancing cyber security; and Mission 5: Ensuring Resilience to Disasters addresses reducing vulnerabilities to the threats of global climate change.

The NSHS that preceded the QHSR also referred to complacency as a challenge in homeland security and beyond stating, "We must guard against complacency and balance the sense of optimism that is fundamental to the American character with the sober recognition that despite our best efforts, future catastrophes—natural and man-made—will occur, and thus we must always remain a prepared Nation" (The White House, 2007, p. 6). Unlike the QHSR, the NSHS provides "responsibilities" instead of "missions" to delineate the strategy. Per the NSHS, the responsibilities of homeland security listed are preventing and disrupting terrorist attacks; protecting the American people, critical infrastructure, and key resources, and responding to, and recovering, from those incidents that do occur. Addressing complacency is not listed in any of these responsibilities.

Also, in the NSHS, guidance is provided to help fulfill those responsibilities over the long term. "We will continue to strengthen the principles, systems, structures, and institutions that cut across the homeland security enterprise and support our activities to secure the Homeland" (The White House, 2007, p. 41). One such principle is fostering a culture of preparedness that includes, "As individual citizens we must guard against complacency, and as a society we must balance the sense of optimism that is fundamental to the American character with a sober recognition that future catastrophes will occur" (p. 41).

This restatement of the challenge statement is the only other mention of complacency. It does not provide an explanation of what complacency is, nor does it explain how to “guard against it.”

In accordance with the structure and methodology of these documents, each of these assumptions should be addressed within a mission and responsibility. The incongruent deference could be for a variety of reasons. Three possible explanations are complacency is not important and does not require the attention that other security factors and challenges do, insufficient understanding of complacency exists to know how to address it appropriately within a mission and responsibility, or the missions and responsibilities are deficient of their overarching responsibility to encompass a broad and diverse range of risks and potential threats. For the purpose of this thesis, the second explanation is the most plausible and most appropriate.

F. PSYCHOLOGICAL AND BIOLOGICAL FACTORS

To a certain degree, homeland security professionals are limited by the mere fact that they are humans. Many different types of people within the Homeland Security enterprise handle a broad range of responsibilities, such as identifying warnings of an attack, assessing risk, and preparedness planning. It is common among all of them that they are human and subject to natural human inclinations. They have tendencies of optimism bias and self-efficacy; they are psychologically predisposed to being complacent.

G. SITUATIONAL AND ENVIRONMENTAL FACTORS

The review of complexity theory in organizations and management, and content analysis of complacency in context, suggests situational and environmental factors of complacency, time and organizational construct. Analysis of Bellavita's (2005) article on the issue attention cycle supports the temporal factor of complacency. The cyclical evolution of homeland security in public opinion and government action regarding attacks and threats presented five predictable stages that some issues follow: preproblem, alarmed discovery,

awareness of the costs of making significant progress, gradual decline of intense public (including public leaders) interest in the problem, and the post-problem stage (Bellavita, 2005). Most notably, analysis of stage four, “the public—including public leaders—gradually loses interest in the problem,” supports that as time moves forward, the sense of urgency that Loy referenced diminishes. It can also be phrased, “as time move forward complacency increases,” (Loy, 2004) just as Chertoff insinuated in his warning against “creeping complacency.”

Another factor of complacency can be found in the environmental construct of complex organizations. West Point Cadets in “The Danger of Complacency” offered a practical example on organizational construct and management in complex organizations. “When a group of individuals work together for quite some time, the environment becomes comfortable. Unfortunately, a comfortable environment brings contentment, stagnation and group think. Before long, there is no striving for advancement or progress...This consistent leadership change keeps unit atmosphere continuously fresh, preventing complacency issues like GM had” (West Point Cadets, 2010). This literature suggests that organizational structure and management can affect the environment that fosters complacency, which is further supported by the analysis of the aviation industry’s research on complacency stating groupthink is a symptom of complacency.

H. COMPLACENCY IN AVIATION: APPLICATIONS FOR HOMELAND SECURITY

Lessons are to be learned from the extensive research the aviation industry has conducted on complacency. First and foremost, the mere fact that it has identified the problem, and over the last few decades, applied effort to understand and address it, exemplifies the credibility it is given in the discipline. Additionally, the fact that the research has led to demonstrable improvements in organizational design, management development and training programs directly resulting in less accidents, validates that addressing the problem can achieve positive results and may be worth the investment.

To achieve the accomplishments of the research, the aviation industry first developed a well-defined, well-understood concept of complacency. However, the research did not stop there. It has developed a full concept that has categories, symptoms, and suggested ways to challenge it. Although its research findings are specific to the aviation industry, some general findings are offered that can applicable to other disciplines.

VI. CONCLUSIONS

This chapter provides the conclusions the author has drawn in her quest to answer research questions that inspired this thesis by providing her findings and expand on each to support her conclusions. Furthermore, she describes how the journey to answer these questions revealed a variety of lenses through which to view complacency in homeland security. Each of these lenses provides a plethora of opportunities for future research of this topic, which is provided at the closing of the chapter.

A. THE EXCEPTION, NOT THE RULE

In the world of homeland security, it is common practice that as threats are identified, counter-measures are developed to mitigate that threat. One threat often mentioned, complacency, seems to be the exception. Complacency, as a threat to homeland security, is given ample deference by leadership in the homeland security community. It is often referred to as a dangerous threat in speeches by homeland security officials and is embedded in homeland security doctrine. However, no research can be currently found that articulates the threat in a manner that can lead to developing counter-measures to mitigate it.

The original intention of this thesis was to fill this void of research and examine the concept of complacency in the context of homeland security. The author's hypothesis was that thorough examination would lead to a clear definition of the threat. Once the threat was defined, the definition would provide insight from which actionable counter-measures could be developed to mitigate it.

The root cause analysis method of this thesis was inspired by the proven success demonstrated by the research conducted on complacency in the aviation industry. The tangible success of research in the aviation industry has resulted in a reduced number of accidents. Research shows a 20/80 ratio of aviation accidents attributed to human errors induced by complacency; a

machine caused 20 percent of accidents, whereas some human element caused 80 percent (Grey Owl Aviation Consultants, 2004). This staggering statistic warranted scholarly investigation by social scientists as to what complacency in aviation is. Their deductive hypothesis is that if an error is part of a chain of events that led to an accident, diffusing the judgment that led to the error can prevent the accident. This concept is a human factors approach to dealing with a problem, where the focus is on the human rather than external causes. Likewise, the research for this thesis required addressing the problem from a human factors perspective.

1. A Human Factors Approach

A human factors approach centers focus on the people within the homeland security enterprise, as the people are afflicted with complacency. The human factors perspective makes it possible to apply what is known about people's abilities, characteristics, and limitations to the equipment they use, environment they function in and jobs they perform. This lens focuses on tools from psychology and behavior. It requires a paradigm shift from focusing on preparing for external threats from enemies that wish to harm this nation and building capabilities to respond to disasters to looking internally at the behaviors, attitudes, and states of mind of people within homeland security organizations.

Human factors are physical, cognitive, or social properties that affect the attitude, state of mind, and behavior of humans. These properties can influence the function of human-environment equilibriums and the overall performance of systems and organizations. Human factors science involves the study of all ways humans relate to the world around them, with the aim of improving operational performance. This science has become widely used across many disciplines since its origin during World War II when the military employed it in designing aircrafts, viewing the aircraft and the pilot as a single organism. While the initial focus of human factors science was on human interaction with technology, the science has expanded to encompass sets of human-specific properties, which

may interact in a critical or dangerous manner with the natural environment and within organizations.

The human factors approach emphasizes addressing this problem with respect to the human-environment equilibrium of the organization. Therefore, it is also necessary to understand the environment. Research of the homeland security enterprise revealed that it is a complex organization. Therefore, it is also prudent to address this problem through the lens of complexity.

2. Complexity

A complex system is one in which numerous independent elements continuously interact and spontaneously organize and reorganize themselves into more elaborate structures over time. Complexity theory views organizations as analogous to the creative disorder in the universe and contends that common management practices should not apply to complex organizations. Common practices of management contend it is their responsibility to decide where an organization is going, enunciate the mission, determine the strategy, and eliminate deviation. Stability is viewed as the ultimate safeguard against anxiety, which could otherwise be overwhelming. These managerial tendencies may seem to make sense, but are actually counter-productive from the complexity theory perspective.

In a typical organization, a chief executive officer supervises a management team with a vision and a strategy supported by a common culture. The organization should stick to its core competencies, build on its strengths, adapt to the market environment, and keep its eyes focused on the bottom line (Rosenhead, 2001). Complexity theorists contend that in a complex environment, making decisions toward this end is a dangerous delusion. Therefore, much management orthodoxy needs to be turned on its head, such as analysis loses its primacy, contingency (cause and effect) loses its meaning, long-term planning becomes impossible, visions become illusions, consensus, and strong cultures becomes dangerous. To this end, it is essential to be cognizant of the complex

nature of the homeland security enterprise when applying the knowledge gained of complacency.

B. IS COMPLACENCY A THREAT TO HOMELAND SECURITY?

The short answer is, yes, people believe it is. It is apparent that the manner in which “complacency” is used proverbially, people have a general consensus that complacency is considered a threat. For example, in February 2008, former Secretary Michael Chertoff attended a roundtable sponsored by *Christian Science Monitor*. This roundtable was summarized and presented as an article in *HS Today*. The author states that during this roundtable Chertoff warned against “creeping complacency” over preparedness for all catastrophes (Kimery, 2008). “Complacency is the greatest enemy that we have and the greatest challenge we have.” Furthermore, Chertoff stated:

We've got a lot more to do ... The biggest [question] my successor will face is, 'Does the public and does Congress have the will to stick to the program, or are we going to start seeing people cannibalize homeland security because we have not been attacked for six years; it doesn't seem like a burning issue anymore. There's a lot of other things we could spend money on, and so, therefore, we will start to allow the progress to be degraded. (Kimery, 2008)

In the same article, the author references how, in May 2005, former U.S. counterterrorism czar Richard Clarke told a homeland security conference in Washington, DC that he feared both the government and public were slipping into a false sense of complacency toward security despite the probability the United States faces another wave of attacks (Kimery, 2008).

It's been 44 months since 9/11 and there is, in some locations around the country and in popular opinion, a growing sense of complacency,” Clarke said, emphasizing that “we can't get back to normal. We can never get back to normal.

Furthermore, Clarke continues to state:

Someday [terrorists] will come back; there will be a second wave...And if we are complacent—if we think because we've [crossed] out all the names on our chart, if we think that we don't

have to reduce our vulnerabilities and improve our security here at home—we will suffer another major attack. (Kimery, 2008)

Finally, this article on complacency includes a bold statement from Chertoff that provides insight into a culture that breeds complacency.

One thing I am sick and tired of is an approach to everything we do, which is, ‘Let’s not pay attention until the disaster happens. Then we will have a hearing. We will punish somebody, and then we will spend a lot of money making up for what happened afterwards. (Kimery, 2008)

During remarks made to the National Cargo Security Council, James Loy (2004), former Deputy Secretary of the DHS, spoke of a “complacency gene” that leads everyone to have the “tendency to default into a careless loss of focus.”

We now have another year’s worth of attacks—in Madrid, Istanbul, Baghdad, and in Saudi Arabia—that indicate we must continue to fight that complacency and maintain an unprecedented level of vigilance in everything we do...our emotions must not be dulled by the passage of time. (Loy, 2004)

In an effort to provide support for maintaining federal funding for the Transit Security Grant Program in New York, Judith Miller (2010), an author and commentator of Fox News, contributing editor of “City Magazine” of the Manhattan Institute, and Pulitzer prize-winning investigative reporter for the *New York Times*, argues that complacency is “our greatest threat.” She opines, “Vigorous counterterrorism effort requires consistent support. That’s tough almost nine years after 9/11 without another major successful attack on American soil. Success breeds complacency —our greatest threat” (Miller, 2010). This usage of complacency is intended to strengthen her persuasive argument.

In “The Relationship of Warning and Response in Homeland Security,” John Brinkerhoff (2001), senior editor of the *Journal of Homeland Security* draws attention to the direct correlation between complacency and the ability for homeland security officials to commit to swift and effective responses to warnings that are out there about impending attacks on the United States. He contends that it is an American tradition to be “surprised” by major events such as 9/11, but

asserts that Americans would not be surprised at all if it were not for complacency and other human errs.

On May 5, 2009, during a media briefing, Secretary Napolitano stated her cautious optimism about the how the knowledge the Center for Disease Control was giving them a better understanding of the H1N1 virus and the guidance on school closings had changed. She stated:

This is not a time for complacency or the belief that we can simply declare victory over H1N1 and move on...This is why we are preparing now for what may come in the future. We are not in a place where we can simply sit back and see what happens. We have to lean forward. And we have to remain prepared because nature has a way of being little unpredictable and throwing us a curveball from time to time." (Department of Homeland Security, 2009)

In addition to the way complacency is used in context by homeland security officials, the manner it is used in homeland security doctrine also suggests that it is used proverbially. The paramount documents reviewed to assess the deference of complacency in homeland security were the 2010 QHSP and the NSHS that preceded the QHSP. These documents were selected because over the past decade, they have been the guiding doctrine that has steered activities in support of the homeland security mission throughout the entire enterprise. Analysis of these documents revealed incongruent deference to complacency in the homeland security mission.

Within the QHSP there are nine assumptions about the nation's security environment that must be considered when developing the five, core homeland security missions. All but one of the assumptions are explicitly addressed within missions. The last assumption listed states, "[W]e must guard against the danger of complacency as memories of the 9/11 attacks and other major crises recede" (Department of Homeland Security, 2010, p. 8). The term "complacency" is highlighted in bold; however, it is not referred to in the rest of the document much less addressed in the five missions' goals and objectives. Examples of other assumptions include the continuation of violent extremist groups, technological

advances and cyber threats, and the threat of global climate change. Respectively, Mission 1: Preventing Terrorism and Enhancing Security addresses violent extremist groups, Mission 4: Safeguarding and Securing Cyberspace addresses enhancing cyber security, and Mission 5: Ensuring Resilience to Disasters addresses reducing vulnerabilities to the threats of global climate change.

The NSHS also referred to complacency as a challenge in homeland security. “We must guard against complacency and balance the sense of optimism that is fundamental to the American character with the sober recognition that despite our best efforts, future catastrophes—natural and man-made—will occur, and thus we must always remain a prepared Nation” (The White House, 2007, p. 6). The NSHS provides “responsibilities” instead of “missions” as within the QHSR to delineate the strategy. Per the NSHS, the responsibilities of homeland security listed are preventing and disrupting terrorist attacks, protecting the American people, critical infrastructure, and key resources, and responding to and recovering from those incidents that do occur. Similarly to the QHSR, complacency is not listed in any of these responsibilities.

Additionally, NSHS guidance is provided to help fulfill those responsibilities over the long term. “We will continue to strengthen the principles, systems, structures, and institutions that cut across the homeland security enterprise and support our activities to secure the Homeland” (The White House, 2007, p. 41). One such principle is fostering a culture of preparedness, which includes, “As individual citizens we must guard against complacency, and as a society we must balance the sense of optimism that is fundamental to the American character with a sober recognition that future catastrophes will occur” (p. 41). This restatement of the challenge statement is the only other mention of complacency. In line with the structure and methodology of these documents, each assumption should be addressed within a mission and responsibility. However, the NSHS fails to provide an explanation of what complacency is, and does not explain how to “guard against it.”

This acceptance of complacency as a threat, however, seems to be without critical examination. The omission of how to address complacency, while highlighting it as a threat in homeland security doctrine, epitomizes this acceptance. Why is complacency an exception? Why is complacency blanketly accepted as a threat, but precluded from further research and investigation as other threats are? These questions compelled the author to critically examine why Americans accept complacency as a threat as true, which led her to look at complacency through the lens of folk psychology and folk models.

1. Folk Psychology and Folk Models

The theory of folk psychology is a psychological theory constituted by the platitudes about the mind that ordinary people are inclined to endorse. It is the theory that mental state terms develop and evolve within cultures, are passed on as memes, and become accepted as common wisdom. However, much caution about applying this theory is warranted.

In “Human Factors and Folk Models,” Sidney Dekker and Erik Hollnagel (2004), Professors of Human Factors and Flight Safety at the School of Aviation at Lund University, discuss the consequences of labeling concepts to describe a broad range of human behaviors. According to Dekker and Hollnagel (2004), human factors and folk science have led to many concepts that express the insights of the functional characteristics of the human mind, which attempt to depict complex human behavior. This propensity to develop concepts that involve human factors, they argue, prevents further investigation into the psychological mechanisms that might be responsible for the behavior because the concepts have become intuitively meaningful in the sense that everyone associates something with them. Therefore, they feel they understand what the concept is and do not investigate further.

Folk models substitute one big term for another instead of defining the big term by breaking it down into more little ones (in science we call this decomposition, or deconstruction)... Folk models are difficult to prove wrong, because they do not have a definition in

terms of smaller components, that are observable in people's real behavior. Folk models may seem glib; they offer popular, but not necessarily helpful, characterizations of difficult phenomena...Folk models easily lead to over generalization...You are not bound to particular definitions, so you may interpret the concepts any way you like. (p. 80)

In addition to the caution that Dekker and Hollnagel (2004) give about using folk models, controversy exists regarding the validity of even using mental state terms at all. An enduring debate is ongoing among philosophers regarding an individual's ability to know the mental states of others. Therefore, they contend that mental state terms should never be used. The other side of the argument is that folk psychology is a valid foundation for applying general terms to describe complex human behavior and mental states of mind.

While it is not the purpose of this thesis to debate the validity of folk psychology and folk models, it is important to highlight the cautions and controversy. At the very least, highlighting these controversial perspectives draws attention to the possibility that using "complacency" may not capture what the intended message is when it is given so much credibility that homeland security professionals are constantly warning against it and highlighting it in doctrine. It can be glossed over like many other human factors concepts through the folk model process. Thus, it becomes a proverbial threat void of true meaning.

C. WHAT IS COMPLACENCY FOR THE HOMELAND SECURITY DISCIPLINE AND WHAT CAN WE DO ABOUT IT?

The lens of folk psychology and folk models introduces two perspectives, from which to define complacency, folk models are valid, folk models are not valid. From the perspective that folk models and folk psychology is valid, it is crucial to accept that complacency obtains its meaning by how it is used and passed along through cultures. This perspective requires that a definition of complacency in homeland security is being developed as time moves forward in the context with which it is used. Through this lens, it may not be possible to

articulate a definition of the concept of complacency in homeland security except for a snapshot in time. It could be a concept that is evolving and developing on its own, developing in the context of which it is used. The way complacency is currently used in context may be a meme that will be passed on for future generations. Could this path lead to synonymy between “complacency: and “threat” in reference to homeland security? This perspective implies that Americans are active participants in creating its meaning. Are they are making it a threat, rather than it already being a threat?

Through the lens of accepting folk models and folk psychology as not true, the mental state term must be decomposed into observable behavior. To avoid the pitfall of mental state terms that Derrek and Hollnagel (2004) present, (substituting one big term for another instead of defining the big term by breaking it down into more little ones observable in people’s real behavior), complacency must be viewed from a variety of perspectives that may lead to multiple definitions, as was so in the aviation industry.

Both these lenses require analysis of how complacency is used in context. This research provides an analysis of how the term is used in the aforementioned examples. The analysis revealed many factors, indicators, and effects of complacency, each of which is prime for future research. Factors include psychological disposition, time, and proximity. Indicators include boredom and self-satisfaction. Effects include a reactionary attitude.

For instance, the term’s use in context indicates that complacency is an emotion inherent within a person and is exhibited through certain behaviors. Although inferred by many of the references, it was distinctly stated by Loy (2004) that a “complacency gene” existed. This figurative use prompted the exploration of the psychological and biological factors that can contribute to complacency.

Gleaned from the way it was used in context, the most common attribute of complacency was a temporal factor. Nearly all the statements reviewed

referred to the prevalence of complacency as time passes from a significant event, most notably 9/11. An example was when former Secretary Chertoff stated, “[A]re we going to start seeing people cannibalize homeland security because we have not been attacked for six years; it doesn’t seem like a burning issue anymore” (Kimery, 2008).

Complacency also has a proximity factor as indicated by comments from Richard Clarke, former U.S. counterterrorism czar. He stated, “It’s been 44 months since 9/11 and there is, in some locations around the country and in popular opinion, a growing sense of complacency” (Kimery, 2008). This reference to locations insinuates varying levels of complacency are dependent on where an individual resides or works within the country. This concept insinuates that people who work or reside in certain areas of the country not in proximity of high-risk areas may have an increased likelihood of displaying complacency.

Similar to the proximity factor based on geography, the proximity factor is also applicable to where individuals fall within the homeland security enterprise and differs based on their responsibilities. Homeland security professionals may exhibit varying degrees of complacency depending upon what their responsibilities are and where they fit in the enterprise. For instance, an intelligence analyst working in the National Capital Region at the National Operations Center with top-secret access to intelligence, real-time status updates of impending threats and is responsible for briefing the Director of National Intelligence on the current threat environment may be less likely to exhibit complacency than a chief of police in a small rural town far away from a high-risk, high-target area.

Content analysis of the literature also revealed a category of indicators of complacency. The most commonly referenced contributor was successes of previous accomplishments. It was also stated that complacency is a result of self-satisfaction. Additionally, James Loy (2004) stated that complacency arises because people have the tendency to “default into a careless loss of focus.” This

statement refers to a natural tendency further explored in the nature and psychological factors of complacency. Finally, Clarke had suggested that popular opinion affects complacency (Kimery, 2008). Popular opinion is the beliefs or sentiments shared by most people, who insinuates people's susceptibility to be influenced by others and is also supported by Denning's reference to groupthink.

Effects of complacency may also contribute to a definition. Statements reviewed by former Secretary Chertoff indicates that complacency instills a reactionary attitude and can degrade success (Kimery, 2008). Brinkerhoff (2001) claims complacency fosters the inertia of the status quo. All these effects are contradictory to the homeland security mission. Homeland security professionals are responsible for planning, training, and exercising in advance of disasters or terrorist attacks to promote the best response to an incident, not adopt a "wait-and-see attitude." Some professionals are also responsible for creating innovative technologies, innovative problem solving, and developing innovative ways to analyze threats. This approach is the opposite of maintaining the status quo, and the prevalence of these effects can be detrimental to the success of the homeland security enterprise in fulfilling its mission in a world that is constantly changing and evolving. To this end, Brinkerhoff boldly suggests that complacency will cause this nation to suffer another major attack.

While a concise definition could not be gleaned from the way complacency is used in context, the factors, indicators, and effects may lead to future research to develop multiple definitions as the aviation industry has developed.

D. CONCLUSION AND FUTURE RESEARCH

In conclusion, the author originally set out to apply basic problem-solving strategies to address a threat to homeland security...complacency, through the lens of human factors and complexity. Her research concludes that the general manner in which complacency is commonly used today indicates it is more of a proverbial threat than an actionable threat. As a proverbial threat, it can be argued that it should not be mentioned at all. However, defining the concept into

actionable, observable behavior may lead to actionable, observable measures to mitigate it.

This thesis was the first research to examine the threat critically. Throughout this journey, the research uncovered a broader range of lenses from which to view complacency in the homeland security enterprise. Each lens further unveiled limitless, albeit tangential, opportunities for research in a wide variety of disciplines. The lenses range the spectrum from philosophy, biological sciences, social sciences, and applied sciences. This broad range allowed the surface to be scratched in each area, and further revealed extensive opportunity for future research.

Future research requires cognizance of human factors and the complexity of the homeland security enterprise. The human factors lens focuses on the people that comprise the homeland security enterprise; making it possible to apply what is known about their abilities, characteristics, and limitations to the jobs they perform. This lens forces this nation to look at the people of the enterprise that affect its success. Additionally, viewing the homeland security enterprise as a complex, self-adaptive system highlights more research opportunities including how the governmental organizations can optimize efficiency by approaching organizational and management problems. One of the key findings of the research conducted in the aviation industry was that changes to organizational construct, management, and training programs impacted the prevalence of complacency. Applying this view to organizations and management in the government agencies of the homeland security enterprise would be a drastic change from the current status quo. However, it may elucidate new and improved ways to fulfill its mission.

Viewing complacency through the folk science and folk psychology lens incites further general exploration into the debate of using mental state terms. Future research questions may include is a mental state term worthy of being considered a threat to homeland security? Additionally, further research can be conducted on how the concept of complacency is passed on as a meme within

the homeland security culture. Will it ever be possible to articulate a meaning for it?

Finally, anyone interested in taking this research further and attempt to define the concept of complacency to answer these original research questions may further explore how “complacency” continues to be used in context. Each of the factors, indicators, and effects examined in this thesis can be explored more thoroughly. Additionally, analysis of how the use of the term has evolved, or maintained consistent, may also aid in articulating a definition.

Critical examination of the threat of complacency is in its infancy stages. Future research can be explored through the many lenses identified in this thesis. It is uncertain whether future research will find that complacency is a threat, is not a threat, or result in a definition, or definitions, that articulate the threat, and counter-measures are developed to mitigate it. However, it is certain that it will lead to more lenses from which it can be viewed.

LIST OF REFERENCES

Anderson, P. (1999, May–June). Complexity theory and organization science. Special Issue: Application of Complexity Theory to Organization Science. *Organization Science*, 10(3), 216–232.

Anderson, P., Meyer, A., Eisenhardt, K., Carley, K. & Pettigrew, A. (1999, May–June). Introduction to the special issue: Applications of complexity theory to organization science. Special Issue: Application of Complexity Theory to Organization Science. *Organization Science*, 10(3), 233–236.

Bandura, A. (1994). Self-efficacy. *The encyclopedia of human behavior*, 4, 71–81.

Bellavita, C. (2005). Changing homeland security: The issue-attention cycle. *Homeland Security Affairs*, 1(1).

Blue Tuna. (2010). *The curse of complacency*. Retrieved from <http://www.bluetunadocs.com/CurseofComplacency.html>

Brinkerhoff, J. (2001, December). The relationship of warning and response in homeland security. *Journal of Homeland Security*, 1–8.

Carter, R. (2008). *The balanced innovator: Turning ideas into reality*. Tucson, AZ: Wheatmark.

Churchland, P. M. (1981). Eliminative materialism and the propositional attitudes. *Journal of Philosophy*, 78(2), 67–90.

Dekker, S., & Hollnagel, E. (2004). Human factors and folk models. *Cognition, Technology & Work*, 6(2), 79–86.

Denning, S. (2006). Challenging complacency. *Ask Magazine*, 46–51.

Department of Homeland Security. (2009, May 6). *Remarks by secretary Napolitano by today's media briefing on the H1N1 flu outbreak*. Retrieved from <https://www.dhs.gov/news/2009/05/06/secretary-napolitanos-remarks-h1n1-flu-outbreak-media-briefing>

Department of Homeland Security. (2010). *Quadrennial homeland security review*. Washington, DC: Government Printing Office.

Educational resources, definitions of human factors and ergonomics. (n.d.). Retrieved from Human Factors and Ergonomics Society website: <http://www.hfes.org/web/educationalresources/hfedefinitionsmain.html>

Fahlgren, G., & Hagdahl, R. (1990). Complacency. In *Proceedings of the 43rd Annual International Air Safety Seminar*. Rome, Italy: Flight Safety Foundation.

Garland, D., Hopkin, V., & Wise, J. (2010). *Handbook of aviation human factors*. Boca Raton, FL: CRC Press.

Grey Owl Aviation Consultants. (2004). *Complacency*. Retrieved from http://www.greyowl.com/articles/complac_article.pdf

Hempel, C. (1964). The theoretician's dilemma: A study in the logic of theory construction. In C. Hempel (Ed.), *Aspects of scientific explanation* (pp. 173–226). New York, NY: The Free Press.

Jensen, R. S. (1995). *Pilot judgment and crew resource management*. Aldershot, UK: Avebury Aviation.

Kimery, A. (2008). *Chertoff warns of complacency over homefront preparedness*. Retrieved from HSToday.us website: <http://www.hstoday.us/briefings/industry-news/single-article/chertoff-warns-of-complacency-over-homefront-preparedness/97b734fe06e7c0946827885d89851595.html>

LaPorte, T. R., & Consolini, P. M. (1991, January). Working in practice but not in theory: Theoretical challenges of “high reliability organizations.” *Journal of Public Administration Research and Theory: J-PART*, (1)1, 19–48.

Lewis, D. (1972, December). Psychological and theoretical identifications. *Australian Journal of Philosophy*, 50(3), 249–258.

Loy, J. (2004, June 15). *Remarks by deputy secretary of homeland security James Loy at the national cargo security council annual convention*. Las Vegas, NV.

McKean, E. (2009). *Redefining definition*. Retrieved from New York Times website: http://www.nytimes.com/2009/12/20/magazine/20FOB-onlanguage-t.html?_r=3

Meister, D. (2009). *The history of human factors and ergonomics*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Miller, J. (2010). *Our greatest threat is complacency*. Retrieved from <http://www.judithmiller.com/7243/terrorism-complacency>

Napolitano, J. (2009, July 29). *Feed your inner genius. Janet Napolitano: Counterterrorism in a networked world*. New York, NY: FORA.tv.

National Commission on Terrorist Attacks upon the United States. (2004). (Philip Zelikow, Executive Director; Bonnie D. Jenkins, Counsel; Ernest R. May, Senior Advisor). *The 9/11 commission report*. New York, NY: W.W. Norton & Company.

Nichols, S. (2002). Folk psychology. In *Encyclopedia of cognitive science*. (pp. 134–140). London: Nature Publishing Group.

O'Malley, M. (1928). Complacency: The foundation of human behavior. *Psychoanalytic Review*, 15(119).

Oxford English Dictionary. (2010). *Complacency*. Second edition, 1989. Online version November 2010. Earlier version first published in New English Dictionary, 1891. Retrieved from <http://www.oed.com:80/Entry/37605>

Phelps, E. A. (2007). Neural mechanisms mediating optimism bias. *Nature*. 102–105.

Raup, R. B. (1925). *Complacency, the foundation on human behavior*. New York, NY: The Macmillan Company.

Ravenscroft, I. (2010). *Folk psychology as a theory*. Retrieved from Stanford Encyclopedia of Philosophy website: <http://plato.stanford.edu/entries/folkpsych-theory/>

Rosenhead, J. (2001). *Rational analysis for a problematic world revisited: Problem structuring methods for complexity, uncertainty and conflict* (2nd ed.). Chichester: John Wiley and Sons.

Shaver, E. (2009, January 6). *A short history of human factors and ergonomics*. Retrieved from the Human Factor Advocate website: <http://www.thehumanfactorblog.com/2009/01/06/a-short-history-of-human-factors-and-ergonomics/>

Sloan, D. G. (2009). *What is human factors*. Retrieved from <http://www.gdsloan.com/WhatIsHF.htm>

Stacey, R. (1992). *Managing the unknowable: The strategic boundaries between order and chaos*. San Francisco, CA: Jossey-Bass.

Stacey, R. (1993). *Strategic management and organisational dynamics*. London: Pitman.

Stich, S., & Nichols, S. (2003). Folk psychology. In S. Stich, & T. A. Warfield (Eds.), *The Blackwell guide to philosophy of mind* (pp. 235–255). Oxford: Basil Blackwell.

Stramler, J. H. Jr. (1993). *The dictionary for human factors/ergonomics*. Boca Raton, FL: CRC Press.

University of Kansas. (2009, May 25). People by nature are universally optimistic, study shows. *Science Daily*.

Webster Online Dictionary. (2011). *Complacency*. Retrieved from <http://www.merriam-webster.com/dictionary/complacency>

Wiener, E. L. (1981). Complacency: Is the term useful for air safety? In *Proceedings of the 26th Corporate Aviation Safety Seminar*. Denver, CO: Flight Safety Foundation.

West Point Cadets. (2010, November 16). *The danger of complacency*, Retrieved from WashingtonPost.com website: <http://views.washingtonpost.com/leadership/panelists/2010/11/the-danger-of-complacency.html>

White House, The. Homeland Security Council. (2007). *National strategy for homeland security*. Washington, DC: Government Printing Office.

White House, The. (2010). *National security strategy*. Washington, DC: Government Printing Office.

Wickens, C. D. (2008). Situation awareness: Review of Mica Endsley's 1995 articles on situation awareness theory and measurement. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, 50(3), 397–403.

Ziemelis, K. (2001). Complex systems-nature insight review. *Nature* 410, 242–258.

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